DOCUMENT RESUME

ED 420 162 EF 005 070

TITLE	How To Manage Asbestos in School Buildings: AHERA Designated Person's Self-Study Guide.
INSTITUTION	Environmental Protection Agency, Seattle, WA.
REPORT NO	EPA#910-B-96-001
PUB DATE	1996-01-00
NOTE	104p.
AVAILABLE FROM	U.S. Environmental Protection Agency, Region 10, 1200 Sixth Ave., Seattle, WA 98101.
PUB TYPE	Guides - Non-Classroom (055)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	*Asbestos; Educational Facilities; *Educational Facilities Improvement; Elementary Secondary Education; Facility Guidelines; Hazardous Materials; *School Buildings
IDENTIFIERS	Asbestos Hazard Emergency Response Act 1986; Facility Management

ABSTRACT

The Environmental Protection Agency (EPA) requires schools to appoint an asbestos management coordinator called the "AHERA (Asbestos Hazardous Emergency Response Act) designated person" (DP) who is responsible for a number of asbestos-related activities. This manual presents some recommendations designed to help those persons appointed to this position understand his or her responsibilities. The DP implements the plan for managing asbestos-containing building materials (ACBM) in the school buildings and ensures that schools comply with federal asbestos regulations. Staff at the EPA have observed that the quality of school asbestos programs depends heavily on the dedication and work of the AHERA DP. DPs who know the AHERA requirements can effectively prevent the release of asbestos fibers not only through their own actions but also through their ability to hire and oversee the work of personnel conducting asbestos-related activities at their school buildings. The eleven chapters presented provide an introduction to asbestos and explain asbestos health risks; detail the AHERA inspection; outline a management plan; and discuss training and accreditation, recordkeeping, and related regulations. (Contains a precourse quiz, six checklists, a glossary of terms, and a list defining pertinent acronyms.) (RJM)

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EPA 910-B-96-001

United States Environmental Protection Agency

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Seattle WA 98101

Alaska
Idaho
Oregon
Washington

Office of Waste and Chemical Management

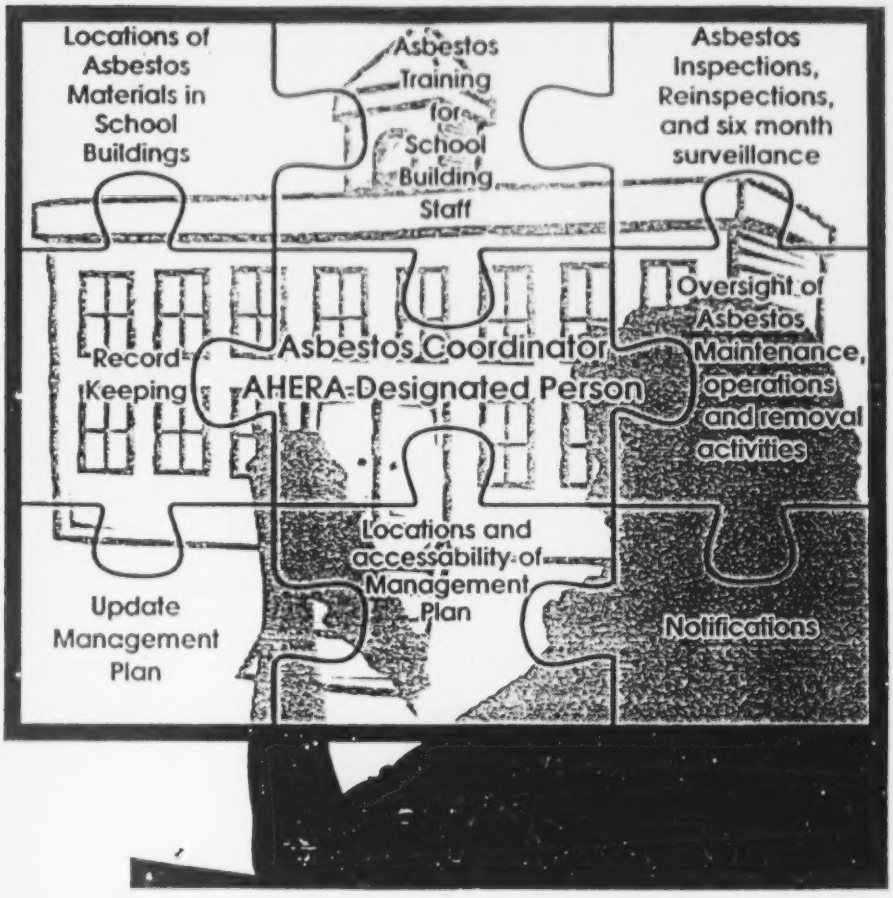
January 1996

EPA

How to Manage Asbestos in School Buildings

AHERA Designated Person's Self-study Guide

ED 420 162


Locations of Asbestos Materials in School Buildings
Asbestos Training for School Building Staff
Asbestos Inspections, Reinspections, and six month surveillance
Record Keeping
Asbestos Coordinator AHERA-Designated Person
Oversight of Asbestos Maintenance, operations and removal activities
Locations and accessability of Management Plan
Update Management Plan
Notifications

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OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

To Whom it May Concern:

EPA requires schools to appoint an Asbestos Manager, called the "AHERA Designated Person," to be responsible for a number of asbestos-related activities, including the implementation of the plan for managing asbestos-containing building materials (ACBM) in the school buildings and compliance with the federal asbestos regulations. EPA staff have observed that the quality of school asbestos programs depend heavily on the dedication and work of the AHERA Designated Person (DP). DPs who know the AHERA requirements can effectively prevent the release of asbestos fibers through their own actions, as well as their ability to hire and oversee the work of personnel conducting asbestos-related activities at their school buildings. *The purpose of this manual is to help the designated person understand his or her responsibilities and comply with the federal asbestos requirements.*

AHERA requires that the DP be ***adequately*** trained to carry out his or her responsibilities. Due to the differing needs of school districts based on the size of the district and the amount and condition of the ACBM, AHERA does not list a specific training course or specific number of hours of training for the DP. Further, AHERA does not require the DP to be accredited. Specifically, the regulations note the training must include the following topics:

- health effects of asbestos;
- detection, identification and assessment of asbestos-containing building materials (ACBM);
- options for controlling asbestos-containing building materials;
- asbestos management programs; and
- relevant Federal and State regulations concerning asbestos, including AHERA and its implementing regulations and the regulations of the Occupational Safety and Health Administration, the U.S. Department of Transportation, and the U.S. Environmental Protection Agency.

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This manual is recommended for persons recently appointed to the position of AHERA Designated Person, as well as persons who have held the position for some time. ***To determine whether reviewing this document would satisfy the training requirements for the DP, school personnel should consult with the regional asbestos coordinator in the EPA Regional Office serving their state.*** For the name and telephone of the local Regional Asbestos Coordinator, contact the EPA Toxics Substances Control Act (TSCA) Hotline at (202) 554-1404.

The U.S. Environmental Protection Agency (EPA) strives to provide accurate, complete, and useful information. The information contained in the manual is the best available information as of December 1995; however, with new regulations, technology, and interpretations, this information is subject to change. It is up to the reader to keep current with the subject matter. Neither the United States government, the EPA, nor any of their employees makes any warranty, express or implied, or assumes any legal liability regarding the use of information provided in this manual. The information is offered for educational purposes only and shall not be construed to create any rights, substantive or procedural, not otherwise available by law.

To Whom it May Concern:

EPA requires school districts (also known as local education agency) to appoint an asbestos manager, called the "AHERA Designated Person," to be responsible for a number of asbestos-related activities, including the implementation of the plan for managing asbestos-containing building materials (ACBM) in the school buildings and compliance with the federal asbestos regulations. EPA staff have observed that the quality of school asbestos programs depend heavily on the dedication and work of the AHERA Designated Person (DP). DPs who know the AHERA requirements can effectively prevent the release of asbestos fibers through their own actions, as well in their role of hiring and overseeing the work of personnel conducting asbestos-related activities at their school buildings. *The purpose of this manual is to help the designated person understand his or her responsibilities and comply with the federal asbestos requirements.*

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PRE-COURSE QUIZ

The questions in this pre-course quiz are related to the information found in this guide. The quiz will serve as an immediate self-assessment of your knowledge of some of the basic principles of the Asbestos Hazard Emergency Response Act (AHERA). Please answer all of the following questions. The answers to the questions immediately follow the quiz.

1. **Asbestos that is easily crumbled into a powder by hand pressure when dry is:**
   A. Friable
   B. Non-friable
   C. Decomposable
   D. Asbestos powder
   E. None of the above

2. **Exposure to asbestos may result in:**
   A. Asbestosis (a disease characterized by lung scarring)
   B. Lung cancer
   C. Mesothelioma (a cancer arising in the chest cavity or abdominal cavity)
   D. All of the above
   E. None of the Above

3. **Asbestos-related diseases are _____ and have a latency period of _____.**
   A. dosed related, 15 to 30 years
   B. fatal, 30 days
   C. non-existent, 60 years
   D. dangerous, 1 hour
   E. serious, 10 years

4. **The three main federal government agencies that regulate asbestos are:**
   A. Food and Drug Administration, Department of Transportation, Environmental Protection Agency
   B. Department of Transportation, Environmental Protection Agency, Occupational Safety and Health Administration
   C. Department of Health and Human Services, Environmental Protection Agency, Occupational Safety and Health Administration
   D. General Services Administration, Department of Health and Human Services, Occupational Safety and Health Administration
   E. No federal government agencies regulate asbestos

5. **Which of the following are not the responsibility of the Local Education Agency?**
   A. must conduct periodic surveillance in each building under its authority at least once every six months and use an accredited inspector to conduct the reinspections every three years
   B. must attach a warning label immediately adjacent to any friable and nonfriable asbestos-containing building material (ACBM) and suspected ACBM located in routine maintenance areas, such as boiler rooms, at each school building
   C. must send all notification, inspection, and periodic surveillance records to EPA on an annual basis
   D. ensure that complete and up-to-date records of inspections, reinspections, response activities, periodic surveillances, and operations and maintenance activities are maintained
   E. must comply with the notification requirements to workers, students, building occupants, parents, and short-term workers

6. **Which activities must be conducted by an accredited inspector?**
   A. Identify all homogeneous areas of material that are suspected to contain asbestos
   B. Gather information on the uses and functions of the spaces within the homogeneous areas
   C. Collect samples of material suspected to be ACBM and send them to the lab for analysis
   D. Perform a physical assessment of the material and document the results in an inspection report
   E. All of the above activities

7. **Some of the most common uses of asbestos-containing building materials found include:**
   A. Fireproofing on structural members
   B. Plaster, pipe and boiler insulation
   C. Acoustical or sound proofing material
   D. Flooring and ceiling tiles
   E. All of the above

8. **In addition to imposing other requirements, the Asbestos Hazard Emergency Response Act requires that a Local Education Agency:**
   A. Close buildings in which asbestos is found
   B. Perform inspections to identify asbestos-containing building materials in its buildings
   C. Notify the Environmental Protection Agency on the locations of asbestos-containing building materials in the schools of the district
   D. Remove all asbestos-containing building materials from its buildings
   E. B and D

9. **A management plan must contain appropriate response actions. Which of the following is not an appropriate response action:**
   A. Replace damaged asbestos-containing building materials with new undamaged asbestos-containing building materials
   B. Repair damaged asbestos-containing building materials to an undamaged or intact condition
   C. Encapsulate asbestos-containing building materials with a material that surrounds or embeds asbestos fibers
   D. Enclose asbestos-containing building materials in an airtight, impenetrable permanent barrier
   E. None, all of these are appropriate response actions

10. **At least once every ____ months, the Local Education Agency must conduct a visual inspection of all areas identified in the management plan as asbestos-containing building materials (ACBM) or assumed to contain asbestos-containing building materials to determine whether the condition of the ACBM or assumed ACBM has changed. This is called a(n) _____.**
   A. 12, periodic surveillance
   B. 12, inspection
   C. 6, periodic surveillance
   D. 6, inspection
   E. 24, reinspection

11. **Final air clearance of a functional space after a response action to remove, encapsulate, or enclose ACBM involves the following:**
   A. visual inspection
   B. collection of air samples
   C. analysis of samples by PLM
   D. analysis of samples by TEM, unless the project involves less than 160 square feet or 260 linear feet, in which PCM may be used
   E. A, B, D

12. **How can the Local Education Agency best minimize accidental disturbances of ACBM during maintenance and renovations activities?**
   A. establish a permit system that calls for all work orders and requests to be processed through the AHERA designated person
   B. require the AHERA designated person to maintain AHERA inspector and management planner accreditations
   C. require the principals of all schools to attend asbestos awareness training
   D. require all periodic surveillance inspections to be conducted by accredited inspectors
   E. assure that all AHERA management plans are updated on an annual basis

1 USING THE SELF-STUDY GUIDE

Aim of the Guide

EPA requires schools to appoint an asbestos management coordinator, called the "AHERA designated person" to be responsible for a number of asbestos-related activities, including the implementation of the plan for managing asbestos-containing building materials (ACBM) in the school buildings and compliance with the federal asbestos regulations.

Even though the AHERA requirements have been in place for some time, EPA inspectors have found misunderstanding and confusion on how to implement the requirements, as well as how to best manage asbestos in school buildings. *EPA has designed this self-study guide to help the designated person understand his or her responsibilities and comply with the federal asbestos requirements.* This manual is recommended for persons recently appointed to the position of AHERA Designated Person, as well as persons who have held the position for some time.

Background

On October 22, 1986, Congress promulgated the Asbestos Hazard Emergency Response Act (AHERA), Public Law 99-519. AHERA mandated that EPA develop regulations to respond to asbestos in schools. On October 30, 1987, EPA promulgated the Asbestos-Containing Materials in Schools Rule (hereinafter referred to as the AHERA Rule), 40 CFR Part 763, Subpart E. This rule requires that all of the nation's nonprofit elementary and secondary schools, both public and private, inspect their school buildings for asbestos-containing building materials (ACBM), develop a plan to manage the asbestos for each school building, notify parents and staff regarding management plan availability, provide asbestos awareness training to school maintenance and custodial workers, and other requirements described in detail in this manual. A list of key responsibilities for school districts is located on page 18. *(Note that certain States consider pre-schools the first step of the elementary education process and therefore have included pre-schools under their State AHERA regulations.)*

The governing authority responsible for AHERA compliance is the Local Education Agency (LEA). "Local Education Agency" means either any local educational agency as defined in Section 198 of the Elementary and Secondary Education Act of 1965 (often called school district), the owner of any private, non-profit elementary or secondary school building, or the governing authority of any school operated under the Defense Department's education system.

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13. A designated person must:
    A. Receive training that provides basic knowledge of a number of asbestos-related subjects, as listed in EPA's asbestos regulations
    B. Complete EPA-or State-approved inspector course and become accredited
    C. Have a college degree
    D. Pass an EPA test on Designated Person roles and responsibilities
    E. Complete no training

14. An asbestos management program is subject to which EPA statutes and regulations:
    A. Asbestos Hazard Emergency Response Act
    B. Asbestos Hazard Emergency Response Act, National Emissions Standards for Hazardous Air Pollutants
    C. Asbestos Hazard Emergency Response Act, National Emissions Standards for Hazardous Air Pollutants, EPA Worker Protection Rule
    D. Asbestos Hazard Emergency Response Act, National Emissions Standards for Hazardous Air Pollutants, EPA Worker Protection Rule and Asbestos School Hazard Abatement Reauthorization Act
    E. None of these

15. Local Education Agencies must conduct the following notifications:
    A. annually to parents, teachers, and employee organizations on the availability of the asbestos management plan
    B. annually to workers, building occupants and their guardians on recent or planned asbestos activities (such as inspections, response action, etc.)
    C. to short-term workers (e.g. telephone repair workers, utility workers, or exterminators) who may come into contact with asbestos on the locations of asbestos-containing building materials (or assumed ACBM)
    D. annually to EPA or state agencies on updates to the management plan.
    E. A, B, C

16. The management plan must:
    A. be kept in the Local Education Agency's administrative office
    B. be kept in the administrative office of each school building
    C. be available to persons for inspection without cost or restriction
    D. be complete and up-to-date
    E. all of the above

(1) A (2) D (3) A (4) B (5) C (6) E (7) E (8) B (9) A (10) C (11) E
(12) A (13) A (14) D (15) E (16) E

In July 1991, EPA released the results of an evaluation of AHERA implementation. The results showed that certain elements of school asbestos programs were not being effectively implemented. The agency concluded that schools needed better guidance on how to run their asbestos programs. Shortly after, EPA hired a contractor to develop the ***Designated Person Self-Study Guide***. Due to the shortage of funding, this project was abandoned in 1992.

Over the past seven years, EPA staff have observed that the quality of school asbestos programs depend heavily on the dedication and work of the AHERA Designated Person (DP). Schools without a competent DP tend to have more AHERA violations. Common violations are listed on the table "Frequent Problems with the Management Plan" on page 47. Schools with DPs who know the AHERA requirements can effectively prevent the release of asbestos fibers through their own actions, as well as their ability to hire and oversee the work of personnel conducting asbestos-related activities at their school buildings.

The ***AHERA Designated Person Self Study Guide*** is an important tool to improve LEA's compliance with AHERA and to protect the health of school building occupants through preventing the release of asbestos fibers. With the support from EPA HQ and all the other EPA regional offices, the Seattle office of EPA undertook the task of updating and finalizing this manual on August 1995.

Responsibilities of the AHERA Designated Person

The responsibilities of the AHERA Designated Person include:

- ensure that all activities of anyone who conducts the following are carried out in accordance with the AHERA requirements: conduct inspections, reinspections, periodic surveillance; develops, implements and updates management plans; and plans and implements asbestos-related activities (such as maintenance or removal);
- ensure that all custodial and maintenance employees are properly trained;
- ensure that all workers, building occupants, students, and their parents are notified annually about management plan availability and recent and upcoming asbestos-related activities;
- ensure that short-term workers who may come into contact with asbestos are provided information regarding the location of this asbestos;
- ensure that all warning labels are posted; and
- consider any conflicts of interest that may arise when selecting accredited personnel to conduct asbestos-related activities.

AHERA Designated Person Required Training

AHERA requires that the DP be ***adequately*** trained to carry out his or her responsibilities. Due to the differing needs of school districts based on the size of the district and the amount and condition of the ACBM, AHERA does not list a specific training course or specific number of hours of training for the DP. Further, AHERA does not require the DP

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to be accredited. Specifically, the regulations note the training must include the following topics:

- health effects of asbestos;
- detection, identification and assessment of asbestos-containing building materials (ACBM);
- options for controlling asbestos-containing building materials; and
- asbestos management programs.
- relevant Federal and State regulations concerning asbestos, including AHERA and its implementing regulations and the regulations of the Occupational Safety and Health Administration, the U.S. Department of Transportation, and the U.S. Environmental Protection Agency *(See Chapter 11 for further information on regulations related to AHERA.)*

To determine whether reviewing this document would satisfy the training requirements for the DP, school personnel should consult with the regional asbestos coordinator in the EPA Regional Office serving their state.

Instructions for Using this Guide

To use this guide effectively:

- Assemble all documents that appear in the list entitled "Documents Required for Completion of Self-Study Guide."

- Make copies of the tables, figures and supplemental materials that appear in this guide to use as working copies.

- Review the chapter summaries and supplemental materials at the end of each chapter as you proceed through the guide.

- Take the Quiz before and after you have completed this Self-Study Guide.

Documents Required for Completion of Self-Study Guide

A designated person using this guide should have copies of the following documents for reference:

- Environmental Protection Agency
  40 CFR Part 763; ***Asbestos-Containing Materials in Schools***; Final Rule (October 30, 1987), the ***Model Accreditation Plan***, Interim Final Rule (February 3, 1994), and ***Asbestos Abatement Projects; Worker Protection; Final Rule*** (February 25, 1987; note: this rule must undergo revision to conform to the OSHA Worker Protection Rule, 29 CFR 1926.1101, 8/10/94).

  100 Commonly Asked Questions About the New Asbestos-in-Schools Rule (May 1988).

- Your School Asbestos Inspection Report/Management Plan
  Choose a document that is representative of your school buildings if you have multiple schools.

- Occupational Safety and Health Administration
  29 CFR §1910.1001: *General Industry Standard on Asbestos* and 29 CFR §1926.1101: *Construction Industry Standard* (August 10, 1994).

Useful References

A designated person may also wish to refer to one or more of the following EPA documents in completing this guide:

- Environmental Protection Agency
  40 CFR Part 61; *National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revision;* Final Rule (November 20, 1990);

  Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book): (June, 1985; 560/5-85-024);

  Managing Asbestos in Place: A Building Owners Guide to Operations and Maintenance Programs for Asbestos-Containing Materials (Green Book) (July, 1990; 20T-2003);

  Asbestos in Buildings; Guidance for Service and Maintenance Personnel (June 1985; 560/5-85-018);

  A Guide to Performing Reinspections Under the Asbestos Hazard Emergency Response Act (AHERA) (Yellow Book) (February 1992);

  Answers to the Most Frequently Asked Questions About Reinspections Under AHERA (May 1991);

  Environmental Hazards in Your School: A Resource Handbook (October 1990).

  Policy Clarification for the Asbestos Hazard Emergency Response Act: *Under What Circumstances is Removal of Vinyl Asbestos Tile or Similar Materials a Response Action under AHERA?* (EPA, July 1992).

To obtain any of the documents listed above, contact the EPA Toxic Substances Control Act (TSCA) Hotline at (202) 554-1404 or the U.S. Government Printing Office.

2 AN INTRODUCTION TO ASBESTOS

The History of Asbestos

The word "asbestos" is derived from the Greek language. The Greeks admired the "miracle mineral" because of its softness and flexibility and its ability to withstand heat. The Greeks used asbestos much like cotton, spinning and weaving it into cloth. Asbestos was not widely available anywhere in the world until the late 1800s, when major deposits were found in Canada. Thereafter, asbestos was used to make thermal insulation for boilers, pipes, and other high temperature applications, and was also used as a fireproofing and reinforcement material. During World Wars I and II, the military used asbestos extensively in ships and other applications. Commercial usages of asbestos in buildings increased greatly thereafter, but growing concerns about the health risks associated with asbestos exposure resulted in a voluntary reduction in the use of asbestos beginning in the 1970s.

Characteristics of Asbestos

Asbestos is comprised of a group of natural minerals. Unlike other minerals, however, the crystals of asbestos form long, thin fibers. Asbestos deposits are found throughout the world, but the primary sites of commercial asbestos production are Canada, Russia, and South Africa. Commercial mining of asbestos in the United States was halted in the 1980s.

Once extracted from the earth, asbestos-containing rock is crushed, milled (or ground), and graded. This produces long, thread-like fibers of material. What appears to the naked eye as a single fiber is actually a bundle of hundreds or thousands of fibers, each of which can be divided even further into tiny fibers (fibrils), invisible without the aid of a microscope.

Asbestos materials are divided into two groups -- *serpentine* and *amphibole*. All asbestos in the serpentine group is called Chrysotile. This is the most common type of asbestos found in buildings in the United States, accounting for approximately 95 percent of the asbestos found in the nation's buildings. It is commonly known as "white asbestos" because of its natural color.

The amphibole group contains five types of asbestos. Amosite, the second most common type of asbestos found in buildings in the United States, is often referred to as "brown asbestos" for the color of the natural mineral. Crocidolite, or "blue asbestos" has been used in high-temperature insulation products and on chemical resistant surfaces, such as laboratory tables for chemistry and biology classes (upon occasion, the custodial staff will drill holes in table tops for new fixtures without realizing that the material may contain crocidolite. The remaining three types of asbestos in the amphibole group -- Anthophyllite, Tremolite, and Actinolite -- are rare and have little commercial value. They are occasionally found as contaminants or minor constituents in asbestos-containing materials.

Uses of Asbestos

Asbestos has been used in thousands of products, largely because it is plentiful, readily available, cheap, strong, does not burn, conducts heat and electricity poorly, and is resistant to chemical corrosion. Products made with asbestos are often referred to as asbestos-containing materials (ACM).

Asbestos proved particularly useful in the construction industry. Building materials that contain asbestos are referred to as asbestos-containing building materials (ACBM). Commercial usage of asbestos products in the construction industry was most common from about 1945 to 1980. Some of the most common uses of ACBM include:

- **Fireproofing material** -- Usually spray-applied to steel beams used in construction of multi-story buildings to prevent structural members from warping or collapsing in the event of fire.

- **Insulation material** -- Usually spray-applied, trowel-applied, or manually installed after being preformed to fit surfaces such as pipes for thermal insulation and condensation control.

- **Acoustical or soundproofing material** -- Trowel- or spray-applied. May also be used for decoration. Asbestos was mixed with other materials and sprayed onto ceilings and walls to produce a soft, textured look.

- **Miscellaneous materials** -- Asbestos has been added to asphalt, vinyl, cement and other materials to make products like roofing felts, exterior siding and roofing shingles, wallboard, pipes for water supply, combustion vents, and flues for waste gases and heat. Fibers in asbestos cement, asphalt, and vinyl materials are usually firmly bound into materials in good condition and typically will be released only if the material is damaged mechanically -- for example through drilling, cutting, grinding, or sanding. In addition, asbestos in roofing shingles and siding exposed to weathering may slowly deteriorate and has the potential to release fibers.

Examples of the more common ACBM found in schools are flooring, vinyl base, mastic, roofing materials, gaskets in heating and air-conditioning equipment, ceiling panels and tiles, wallboard, joint compound, plaster, pipe and boiler insulation, duct-wrap insulation, duct joint tape, duct vibration dampening cloth, fireproofing on structural members, fire brick for boilers, fire doors, acoustical spray-on, cement pipes, and panels.

Friable vs. Nonfriable ACBM

Friable ACBM will release fibers into the air more readily than nonfriable ACBM. Therefore, the AHERA Rule differentiates between friable and nonfriable ACBM. The regulations define friable ACBM as material that may be crumbled, pulverized, or reduced to powder by hand pressure when dry. Friable ACBM also includes previously nonfriable material when it becomes damaged to the extent that when dry it may it may be crumbled, pulverized, or reduced to powder by hand pressure. ***Undamaged non-friable ACBM should be treated as friable if any action performed on the material will make them friable.***

Categories of Asbestos-Containing Building Materials

EPA identifies three categories of ACBM *(See the definitions appearing in § 763.83 of the AHERA Rule)*:

- **Surfacing Materials** -- Interior ACBM that has been sprayed on, troweled on, or otherwise applied to surfaces (structural members, walls, ceilings, etc.) for acoustical, decorative, fireproofing, or other purposes. This includes acoustical plaster, hard plasters (wall or ceiling), fireproofing insulation, spray-applied or blown-in thermal material, joint or patching compound (wall or ceiling), and textured paints or plasters.

- **Thermal System Insulation** -- Insulation used to control heat transfer or prevent condensation on pipes and pipe fittings, boilers, breeching, tanks, ducts, and other parts of hot and cold water systems; heating, ventilation, and air conditioning (HVAC) systems; or other mechanical systems. These insulation materials include pipe lagging, pipe wrap, HVAC duct insulation, block insulation, cements and muds, and a variety of other products such as gaskets and ropes.

- **Miscellaneous Materials** -- Other, mostly nonfriable products and materials found on structural components, structural members or fixtures, such as floor tile, ceiling tile, construction mastic for floor and ceiling materials, sheet flooring, fire doors, asbestos cement pipe and board, wallboard, acoustical wall tile, and vibration damping cloth. "Miscellaneous materials" do not include thermal system insulation or surfacing materials.

Please note that batt, blanket, and blown-in insulation should be placed in one of the above categories according to use.

Chapter 2 Summary
Key Points About Asbestos

This chapter introduces some important terms used in the AHERA Rule. The designated person should be especially familiar with the following:

Asbestos-Containing Material (ACM) -- Any material or product that contains more than one percent asbestos.

Asbestos-Containing Building Material (ACBM) -- Surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a school building.

Friable ACBM -- Material that may be crumbled, pulverized, or reduced to powder by hand pressure when dry. Friable ACBM also includes previously nonfriable material when it becomes damaged to the extent that when dry it may it may be crumbled, pulverized, or reduced to powder by hand pressure.

Nonfriable ACBM -- Material that, when dry, may not be crumbled, pulverized, or reduced to powder by hand pressure.

Surfacing ACM -- Interior ACM that has been sprayed on, troweled on, or otherwise applied to surfaces (structural members, walls, ceilings, etc.) for acoustical, decorative, fireproofing, or other purposes.

Thermal System ACM -- Insulation used to control heat transfer or prevent condensation on pipes and pipe fittings, boilers, breeching, tanks, ducts, and other parts of hot and cold water systems; heating, ventilation, and air-conditioning (HVAC) systems; or other mechanical systems.

Miscellaneous ACM -- Other, mostly nonfriable, products and materials (found on structural components, structural members or fixtures) such as floor tile, ceiling tile, construction mastic for floor and ceiling materials, sheet flooring, fire doors, asbestos cement pipe and board, wallboard, acoustical wall tile, and vibration damping cloth.

Undamaged non-friable ACBM should be treated as friable if any action performed would render these materials friable. When previously non-friable ACBM becomes damaged to the extent that when dry it may it may be crumbled, pulverized, or reduced to powder by hand pressure, it should be treated as friable.

3 ASBESTOS HEALTH RISKS

Health Effects Associated with Asbestos Exposure

The health effects associated with asbestos exposure have been studied for many years. Results of these studies show that inhalation (breathing in) of asbestos fibers leads to increased risk of developing several diseases. Exactly why some people develop these diseases remains a mystery, but it has been well demonstrated that most asbestos-related illnesses are dose-response related (i.e., the greater the exposure to airborne asbestos fibers, the greater the risk of developing an illness).

Relative Hazards of Asbestos Exposure

Almost daily, we are exposed to some prevailing level of asbestos fibers in buildings or experience some existing level in the outdoor air. Some fibers that are inhaled remain in the lungs. Brief "bursts" of exposure, when added to the background level, increase the potential to cause or trigger the development of an asbestos related disease. These brief bursts of exposure occur in many ways. For example, when a carpenter drills a hole in an asbestos fire door without taking any precautions, an increased amount of asbestos may be released into the air. The more often these bursts of exposure occur, the greater the risk of breathing asbestos fibers.

People most at risk for this additional exposure are maintenance and construction workers who work on and disturb asbestos in buildings. This clearly demonstrates the need for an active asbestos policy and an ongoing operations and maintenance (O&M) plan for buildings that contain ACBM.

It is important to recognize that the majority of people who have developed diseases because of asbestos exposures are former asbestos workers. These workers were frequently exposed to high levels of asbestos fibers each working day, with little or no protection. Today's asbestos maintenance workers and AHERA-trained asbestos abatement workers are trained to follow specific work practices and wear appropriate protection, including respirators, to minimize the risk of exposure. However, increased risk may occur when a worker who does not use a respirator or follow specific work practices disturbs any ACBM.

The Respiratory System

The effects of asbestos exposure most often involve the lungs. Air breathed into the body passes through the mouth and nose, continuing into the windpipe. The windpipe divides into smaller and smaller tubes that end up in the lungs as air sacs called alveoli. It is in these air sacs that respiration occurs. Oxygen is absorbed into tiny blood vessels (or capillaries), and waste gases, such as carbon dioxide, pass out of the blood and are exhaled.

The body has several mechanisms to "filter" the air it breathes. First, large particles are removed in the nose and mouth. Many smaller particles are caught on the mucus-coated walls of the airway tubes. These airways have "hairy" linings (ciliate cells) that constantly propel mucus upward. Particles caught in the mucus are swept up into the back of the mouth. From here they are swallowed or expelled (spit out). Unfortunately, cigarette smoking temporarily paralyzes these hair-like cells, disabling one of the body's natural defenses against unwanted dust or fibers.

Despite natural bodily defenses, some dust particles inevitably reach the tiny air sacs in the lungs. When this occurs the human immune system dispatches large cells called macrophages to engulf the particles and "digest" them. These cells deposit a coating on the particles and may begin forming scar tissue around them. This is just another natural defense mechanism the body uses against unwanted debris in the lungs.

Asbestos-Related Diseases

If the body's defenses fail to control or remove asbestos fibers that enter the lungs, the risk of developing an asbestos-related disease increases. Asbestos-related diseases include asbestosis, lung cancer, mesothelioma, and other cancers.

- **Asbestosis** -- Asbestosis is a disease characterized by lung scarring. It reduces lung elasticity -- the ability to inhale and exhale in response to muscular contractions of the diaphragm -- and makes breathing very difficult. Asbestosis is most common among workers who have been exposed to large amounts of asbestos fibers over a period of time. It is a serious disease and, in those persons exposed to high levels of asbestos, can eventually lead to disability or death. All forms of asbestos are suspected to have the potential to cause asbestosis. Like all diseases associated with asbestos exposure, it may take many years for the disease to show up. The typical latency period for asbestosis is 15 to 30 years. Available data indicate that the frequency of occurrence of asbestosis rises and the disease worsens with increasing dust exposure. The Occupational Safety and Health Administration (OSHA) Asbestos Standards were developed to minimize the incidence of asbestosis among asbestos workers by reducing their exposure to asbestos.

- **Lung Cancer** -- As with asbestosis, there appears to be a dose-response relationship between asbestos exposure and lung cancer. In addition, lung cancer arising from asbestos exposure also has a latency period before development -- typically 30 years or longer. The risk of contracting lung cancer as a result of exposure to asbestos increases if the worker is a cigarette smoker. Cigarette smokers who are exposed to asbestos are over 50 times more likely to develop lung cancer than the normal, non-smoking population. As a result, a program to help workers stop smoking and an asbestos operations and maintenance program will help reduce the risk of lung cancer among asbestos maintenance workers.

- **Mesothelioma** -- Mesothelioma is a cancer that occurs in the chest cavity lining or in the lining of the abdominal (stomach) lining. This type of cancer spreads rapidly and is always fatal. Cases of mesothelioma have been found in people who have had a limited exposure to asbestos. The onset of this disease appears to be independent of smoking behavior but related to dose and to time from first known asbestos exposure. Mesothelioma tends to have a long latency period -- usually 30 to 40 years.

- **Other Diseases** -- Several other diseases seem to occur more frequently among people who have been exposed to asbestos. These include cancer of the esophagus, stomach, colon, and pancreas; pleural (fibrous) plaques; pleural thickening; and pleural effusion.

The risks of contracting any of these diseases make it extremely important that asbestos maintenance workers utilize proper work practices and respiratory protection.

Risks Associated with Low Exposure

While studies of asbestos workers and laboratory animals clearly reveal that asbestos is hazardous, the risks associated with low-level, non-occupational exposure (i.e., an occupant of a building who is not actually disturbing the asbestos) have not been directly demonstrated. Estimating low-level risks from exposure data is not a straightforward process, and the validity of current methodologies is questionable.

Based on a thorough review of the literature available on the health effects of asbestos, the National Institute for Occupational Safety and Health (NIOSH) has concluded that there is no level below which the risks of contracting an asbestos-related disease are zero. This means that there is no established safe level of exposure to asbestos.

EPA Policy for Asbestos Control in Schools

EPA bases its policy for asbestos control in schools on the following premises:

- Although asbestos is hazardous, the risk of asbestos-related disease depends upon exposure to airborne asbestos fibers.

- Based upon available data, the average airborne asbestos levels in buildings seem to be very low. Accordingly, the health risk to most building occupants also appears to be very low.

- Removal is often not a building owner's best course of action to reduce asbestos exposure. In fact, an improper removal can create a dangerous situation where none previously existed.

- EPA only requires asbestos removal to prevent significant public exposure to airborne asbestos fibers during building demolition or renovation activities.

- Asbestos that has been identified will pose little risk if it is well maintained under an operations and maintenance program. Improper operations and maintenance also can cause dangerous situations. Therefore, EPA requires a pro-active, in-place management program whenever ACBM is discovered and is not removed.

Chapter 3 Summary
Key Points About Asbestos Health Risks

Asbestos-related diseases are dose-response related (the greater the exposure to airborne fibers, the greater the risk of developing an illness) and have a latency period (typically 15 to 30 years).

Exposure to asbestos may result in **asbestosis** (a disease characterized by lung scarring, which reduces the lungs' ability to function), **lung cancer, mesothelioma** (always-fatal cancer arising in the chest or abdominal cavity), and **other diseases.**

Risks associated with low-level, non-occupational exposure (e.g., a building occupant who is not actually disturbing the asbestos) are not well established. The National Institute for Occupational Safety and Health (NIOSH) has determined, however, that there is no established safe level of exposure.

Asbestos that has been identified will pose little risk if it is well maintained under an operations and maintenance program. EPA only requires asbestos removal to prevent significant public exposure to airborne asbestos fibers during building demolition or renovation activities.

4 WHAT IS REQUIRED OF THE LEA?

Scope and Purpose of AHERA

Broadly stated, AHERA requires that each Local Education Agency (LEA) perform inspections to identify asbestos-containing materials in each of the public and private elementary and secondary schools under its authority; develop, implement and update asbestos management plans; take appropriate response actions; safely maintain asbestos-containing building materials (ACBM); and comply with AHERA's recordkeeping requirements.

The AHERA Rule outlines the general responsibilities of a LEA in § 763.84 and the specific duties of the LEA in the succeeding sections of the rule.

General LEA Responsibilities

Under § 763.84 of the AHERA Rule, the LEA has the following general responsibilities:

- Ensure that the activities of any persons who perform inspections, reinspections, and periodic surveillance, develop and update management plans, develop and implement response actions, and conduct operations and maintenance activities are in compliance with all of the AHERA requirements.
- Ensure that all custodial and maintenance workers are properly trained.
- Ensure that workers and building occupants or their legal guardians are notified at least annually about activities relating to ACBM.
- Ensure that short-term workers who may come in contact with asbestos in a school are provided the locations of ACBM and suspected ACBM assumed to be ACBM.
- Ensure that warning labels are properly posted.
- Ensure that management plans are available for inspection.

- Appoint a "designated person" to ensure proper implementation of the AHERA requirements.

- Ensure that the designated person receives adequate training to perform duties assigned.

- Consider whether any conflict of interest may arise among personnel undertaking activities related to the ACBM in a school or schools.

(See the Checklist of LEA General Responsibilities Under AHERA at the end of this chapter.)

Conflicts of Interest

The AHERA Designated Person (school asbestos coordinator) should take into consideration any conflict of interest and determine whether it should influence their selection of contractors to accomplish asbestos related work in their schools. The AHERA Rule identifies several situations where a conflict of interest may arise. For example, the abatement contractor is not allowed to conduct final air sampling for clearance by TEM analysis *(See 40 CFR Part 763, Appendix A to Subpart E ((II)(B)(2))*. The group that determines whether an abatement site is acceptable for re-occupancy should not be the same (or a related group) that is conducting the abatement work. Similarly, if the LEA requires a management planner to sign a statement certifying that the management plan is in compliance with AHERA, then the LEA may not want the planner signing the statement to be the one who implements or will implement the plan. The LEA may have unique concerns regarding potential conflicts that should be discussed with and addressed by the designated person.

Specific Responsibilities of the LEA

Sections 763.85-763.99 of the AHERA Rule detail the specific responsibilities of the LEA. These responsibilities are listed below, followed by brief descriptions. The responsibilities are discussed in greater detail in subsequent chapters of this guide.

- **Inspections** -- An accredited inspector must conduct inspections of each school building under the authority of the LEA. This involves visually inspecting buildings for friable and nonfriable ACBM, sampling such materials unless they are assumed to be ACBM, and having samples analyzed in accordance with the AHERA regulations. Only accredited laboratories may be used to perform bulk material sampling analyses.

- **Reinspections** -- An accredited inspector must conduct a reinspection of all friable and nonfriable known or assumed ACBM in each school building at least once

every three years that a management plan is in effect. A management planner must review all three year inspection reports.

- **Assessment** -- For each inspection and reinspection, an accredited inspector must provide a written assessment of all friable known or assumed ACBM in the school building.

- **Management Plans** -- Each LEA must complete an asbestos management plan for each school under its authority. An accredited management planner must prepare the management plan based on the results of the inspection. In the management plan, the management planner recommends appropriate response actions, prepares cost estimates on the response actions, and schedules the response actions. The management plan must be updated on a timely basis.

- **Response Actions** -- Based on the recommendations of the management planner, the LEA must select the appropriate response actions consistent with the assessment of the ACBM. The designated person must see to it that the response actions are carried out in a timely manner and in compliance with the AHERA requirements. "Timely manner" is not defined in the regulations but involves the joint development of a schedule for plan implementation by the management planner and the designated person. Only accredited laboratories may be used to perform final clearance air sample analyses.

- **Operations and Maintenance** -- The LEA must implement an operations and maintenance (O&M) program whenever any friable ACBM is present or assumed to be present in a building under its authority. Where material identified as nonfriable ACBM or nonfriable assumed ACBM is about to become friable as a result of activities performed in the building, it must be treated as friable and thus must also be subject to an O&M program. EPA recommends that the LEA also manage nonfriable ACBM in their school buildings under an O&M program.

- **Training** -- AHERA requires that building inspectors, management planners, project designers, contractors/supervisors, and asbestos workers be accredited before they can perform asbestos-related activities. The AHERA regulations details specific training requirements for the designated person and for custodial and maintenance workers, although these individuals are not required to complete any EPA-approved courses or receive accreditation.

- **Notification** -- The LEA must issue the following notifications regarding asbestos identified in its schools:

  -- An annual notice to all workers and building occupants, or their legal guardians, of all inspections, reinspections, and activities being conducted to control asbestos exposure, including periodic surveillance and asbestos removal, that are planned or in progress. This notification

should be documented in the management plan.

-- An annual written notice informing parent, teacher, and employee organizations of the availability of the management plan for their review. A dated copy of this notice must be maintained as part of the management plan.

-- A notice to short-term workers (e.g., telephone repair workers, utility workers, or exterminators) who may come into contact with asbestos in a school identifying the location of ACBM or assumed ACBM in the building. This notification should be documented in the management plan.

A description of all notification processes must be maintained as part of the management plan. The Parent Teacher Association (PTA) or school newsletter may be used as a means to distribute the notifications to the students and their families.

- **Periodic Surveillance** -- The LEA must conduct periodic surveillance in each building under its authority at least once every six months after a management plan is in effect. The periodic surveillance inspection report must be kept in the management plan.

- **Recordkeeping** -- Records involving the inspection of and response to ACBM must be kept in a centralized location in the administrative office of both the school and the LEA. EPA recommends keeping these records in the management plan for each school building and the overall management plan for all school buildings. Recordkeeping is the responsibility of the designated person. The following records must be kept:

  -- Descriptions of preventive measures and response actions taken for friable and nonfriable ACBM and suspected ACBM
  -- Sampling information
  -- Training information
  -- Periodic surveillance information
  -- Information on initial and additional cleaning performed
  -- Information on operations and maintenance activities, including information on any maintenance activities disturbing friable ACBM
  -- Notifications to parents, building occupants, and short-term workers
  -- Information on any fiber-release episodes

- **Warning Labels** -- The LEA must attach a warning label immediately adjacent to any friable and nonfriable ACBM and suspected ACBM assumed to be ACBM located in routine maintenance areas (such as boiler rooms) at each school building.

Chapter 4 Summary
Key Points About LEA Responsibilities

The LEA must have an accredited inspector conduct **inspections** of each school building under its authority. A **reinspection** of all friable and nonfriable known or assumed ACBM in each school building must be conducted at least once every three years that a management plan is in effect. A management planner must review all three year inspection reports.

For each inspection and reinspection, an accredited inspector must provide a written **assessment** of all friable known or assumed ACBM in the school building.

The LEA must have an accredited management planner review the results of the inspection/reinspection and the assessment and make written recommendations on appropriate response actions. The accredited management planner also prepares the asbestos **management plan** for each school under its authority.

The LEA must select the appropriate **response actions** consistent with the assessment of the ACBM and the recommendations of the management planner.

The LEA must implement an **operations and maintenance (O&M) program** whenever any friable ACBM is present or assumed to be present in a building under its authority.

Building inspectors, management planners, project designers, contractors/supervisors, and asbestos workers must complete EPA- or State-approved courses and receive accreditation before they can perform any asbestos-related activities. The AHERA Rule also specifies training requirements for LEA designated persons and custodial and maintenance workers, although these individuals are not required to complete any EPA-approved courses or receive accreditation.

The LEA must conduct **periodic surveillance** in each building under its authority at least once every six months after a management plan is in effect.

The LEA must comply with the requirements to provide **notification** about asbestos activities to workers, students, parents, teachers, and short-term workers.

The LEA must maintain **records** in accordance with the AHERA regulations.

The LEA must attach a **warning label** immediately adjacent to any friable and nonfriable ACBM and assumed ACBM located in routine maintenance areas (such as boiler rooms) at each school building.

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Checklist of the Local Education Agency's General Responsibilities Under AHERA

The AHERA Designated Person must complete and sign a statement that the Local Education Agency has met (or will meet) the responsibilities listed below. All references are to specific provisions to the AHERA regulations (under § 763.84). The AHERA Designated Person should be able to answer "yes" to each statement below.

___ 1. The activities of any persons who perform inspections, reinspections, and periodic surveillance, develop and update management plans, and develop and implement response actions, including operations and maintenance, are carried out in accordance with 40 CFR Part 763, Subpart E.

___ 2. All custodial and maintenance employees are properly trained as required in 40 CFR Part 763, Subpart E and all other applicable federal and/or state regulations (e.g., the Occupational Safety and Health Administration Asbestos Standard for Construction, the EPA Worker Protection Rule, or applicable state regulations).

___ 3. All workers and building occupants, or their legal guardians, are informed at least once each school year about inspections, response actions, post-response action activities, including periodic reinspections and surveillance activities, that are planned or in progress.

___ 4. All short-term workers (e.g., telephone repair workers, utility workers, or exterminators) who may come in contact with asbestos in school are provided information regarding the locations of ACBM and assumed ACBM.

___ 5. All warning labels are posted in accordance with § 763.95.

___ 6. All management plans are available for inspection, and notification of this availability has been provided in accordance with § 763.93(g).

___ 7. The undersigned person designated by the LEA according to § 763.84(g)(1) has received adequate training as required by § 763.84(g)(2).

___ 8. The LEA has and will consider whether any conflict of interest may arise from the interrelationship between accredited personnel, and whether this potential conflict should influence the selection of accredited personnel to perform activities under 40 CFR Part 763, Subpart E.

5 THE AHERA INSPECTION

Introduction

An AHERA inspection must be conducted by an "accredited inspector," i.e., one who has attended and successfully completed a course approved by EPA or an EPA-approved State program, passed an exam and received an accreditation number and certificate. This accreditation must be updated annually. Once an AHERA inspection is complete, the inspector must submit the results to the LEA in an inspection report. There are two elements to an AHERA inspection: identification and physical assessment.

Identification of ACBM

The initial inspection to identify all the ACBM in a building begins with locating and listing all "homogeneous areas" of material that are suspected to contain asbestos. A "homogeneous area" is an area of surfacing material, thermal system insulation, or miscellaneous material that is uniform in color and texture. Suspected ACBM in a homogeneous area or functional space must then be treated as ACBM unless samples are taken and the sample analyses show the material to be non-asbestos. "Functional space" means a room, group of rooms, or homogeneous area designated by a person accredited to prepare management plans, design abatement projects, or conduct response actions.

Homogeneous Areas

As was discussed in Chapter 2, interior materials suspected of containing asbestos must be categorized as one of the following three types:

Surfacing Materials
Thermal System Insulation (TSI)
Miscellaneous Materials

Once a material is classified as a particular type, the inspector should identify areas where the materials are all of one type.

Note, EPA suggests that wings or additions added to a building should not be considered homogeneous with the original structure. Building materials used in different buildings should not be considered homogeneous. If there is any reason to suspect that materials

might be different, even if they appear similar, they should be assigned to separate homogeneous areas, and if it is determined that sampling is needed, such materials should be sampled separately. It is important that the inspector correctly identify all homogeneous areas in the inspection report.

(See Example Form 1 at the end of this chapter for an example of how to record information about the homogeneous areas in a school building.)

Functional Spaces

Once the inspector has identified the homogeneous areas in a building, he or she must gather information that will tie each area to the uses or functions occurring within it. The management planner will use the information gathered by the inspector to determine functional spaces. Under the AHERA Rule, a functional space is essentially a room, group of rooms, or space in a building that has an identified use. Examples of functional spaces are classrooms, hallways, offices, mechanical rooms, ceiling plenums, tunnels, and crawl spaces.

(See Example Form 2 at the end of this chapter for an example of how to record information relating each homogeneous area to a functional space.)

Bulk Sampling

Under the AHERA Rule, all material suspected to be ACBM must be assumed to be ACBM unless:

> The homogeneous area is sampled as required by § 763.86 of the AHERA Rule, and the samples are analyzed as required by § 763.87 of the AHERA Rule and found to be non-asbestos; or
>
> The suspect or assumed ACBM is in a building built after October 12, 1988, that is certified by an architect or developer as being asbestos-free.

Where sampling and analysis is performed on suspected ACBM, the procedures must be properly documented and the sample's asbestos content must be below the EPA definition of ACM *(See Glossary in Appendices)* in order for any of the suspect material to be treated as asbestos-free.

Section 763.86 of the AHERA Rule sets forth requirements for bulk sampling based on the type of material involved. Table 5-1 shows the number of samples required to be collected from each type of homogeneous area to meet the regulation requirements.

Table 5-1

Bulk Sampling Requirements	
Type of Material	**Samples Required**
Friable Surfacing Material	
Area ≤ 1,000 sq. ft.	3
Area > 1,000 sq. ft. but ≤ 5,000 sq. ft.	5
Area > 5,000 sq. ft.	7
Thermal System Insulation (TSI)	
TSI not assumed to be ACBM	3
Patched TSI not assumed to be ACBM (if patched section < 6 linear or sq. ft.)	1
Each insulated mechanical system not assumed to be ACBM where cement or plaster is used on fittings such as tees, elbows, or valves	Samples in a manner sufficient to determine if material is or is not ACBM*
Friable Miscellaneous Material not Assumed to Be ACBM	Samples in a manner sufficient to determine if material is or is not ACBM*
Nonfriable Suspected ACBM not Assumed to Be ACBM	Samples in a manner sufficient to determine if material is or is not ACBM*

* EPA recommends that three samples be taken to meet this requirement

Note: The designation of ACM for a homogeneous area based on one positive bulk sample result is acceptable.

The regulations do not indicate how many samples are required to meet the "in a manner sufficient to determine." However, the EPA policy statement in the document *100 Commonly Asked Questions About the New AHERA Asbestos-in-Schools Rule* recommends that a minimum of three samples be taken from any homogeneous area to prove that a material does not contain asbestos. However, the designation of ACM for a homogeneous area based on one positive bulk sample result is acceptable.

Bulk samples are not required to be collected from any homogeneous area where the accredited inspector has determined that the thermal system insulation is fiberglass, foam glass, rubber, or other non-ACBM.

It is recommended that all samples taken always be analyzed, since one sample analysis is rarely representative of a homogeneous area. EPA recommends the use of an improved test method entitled "Method for the Determination of Asbestos in Bulk Building Materials" in place of the 1982 procedures as found in 40 CFR Part 763, Appendix E to Subpart E. Further EPA recommends that LEAs which have Polarized Light Microscopy (PLM) laboratory results indicating floor tiles to be non-asbestos containing may want to retest these materials using this new method. This method should be considered for the following: 1) floor tiles which may contain thin fibers and which were analyzed under the 1982 method and found not be contain asbestos, and 2) materials such as hard wall and acoustical plaster, stucco or other similar multi-layered materials or systems which were not analyzed and reported by layers.

(See Example Form 3 at the end of this chapter for a form that is representative of a bulk sampling log that should appear in your inspection report.)

Exclusions to the AHERA Inspection Requirements

Under the AHERA Rule, all ACM that are used as interior building materials in a school must be identified by ACBM category so that they may be properly sampled and assessed for appropriate response action. However, identification of ACM at schools is not required for ACM that is not installed (stored on site) or for consumer products at the school (auditorium curtains, electrical wiring stored on-site, fire blankets, etc.). ACM installed outside of the building (such as roofing materials and siding) is also excluded from inspection under AHERA. However, this exemption does not extend to the underside of any portico or covered exterior hallway or walkway or to any exterior portion of a mechanical system.

Section 763.99 of the AHERA Rule also excludes from the inspection requirements any sampling area or homogeneous area of a school building where:

- An accredited inspector has determined that, based on sampling records, friable ACBM was identified in the area during an inspection conducted before December 14, 1987. However, such ACBM must still be physically assessed by the accredited inspector.

- An accredited inspector has determined that, based on sampling records, nonfriable ACBM was identified in the area during an inspection conducted before December 14, 1987. In such a case, the accredited inspector must identify whether material that was nonfriable has become friable since the previous inspection and must assess the newly friable ACBM.

- Based on sampling records and inspection records, an accredited inspector has determined that no ACBM is present in the area and the records show that the area was sampled before December 14, 1987, in substantial compliance with the AHERA Rule.

- The lead agency responsible for asbestos inspection in a State that has been granted a waiver from the inspection requirements of the AHERA Rule has determined that, based on sampling records and inspection records, no ACBM is present in the area. The records must show that the area was sampled before December 14, 1987, in compliance with the AHERA Rule.

- An accredited inspector has determined that, based on records of an inspection conducted before December 14, 1987, suspected ACBM identified in the area is assumed to be ACBM. In such a case, the inspector must identify whether material that was nonfriable suspected ACBM assumed to be ACBM has become friable since the previous inspection and must assess any newly friable material and previously identified friable suspected ACBM assumed to be ACBM.

- Based on inspection records and contractor and clearance records, an accredited inspector has determined that all ACBM was previously removed from the area.

- An architect or project engineer responsible for the construction of a new school building built after October 12, 1988, or an accredited inspector signs a statement that no ACBM was specified as a building material in any construction document for the building or no ACBM was used as a building material in the building.

Physical Assessment

Once the inspector has identified all of the ACBM in a building, he or she must perform a physical assessment of all TSI and friable material. Under § 763.88 of the AHERA Rule, the physical assessment of ACBM involves classifying the material into one of the following seven Physical Assessment Categories:

1. Damaged or significantly damaged thermal system insulation (TSI) ACBM
2. Damaged friable surfacing ACBM
3. Significantly damaged friable surfacing ACBM
4. Damaged or significantly damaged friable miscellaneous ACBM
5. ACBM with potential for damage

6. ACBM with potential for significant damage
7. Any remaining friable ACBM or friable suspected ACBM

The physical assessment may include the following considerations:

- Location and amount of the material
- Condition of the material, specifying:
  - -- Type of damage or significant damage
  - -- Severity of damage
  - -- Extent or spread of damage
- Whether the material is accessible
- Material's potential for disturbance
- Known or suspected causes of damage or significant damage
- Preventive measures that might eliminate the reasonable likelihood of undamaged ACBM from becoming significantly damaged

To determine which of the seven Physical Assessment Categories a material should be placed into, several terms must be defined. The preamble to the AHERA Rule, Federal Register, October 30, 1987, p. 41830, examines the difference between "damaged material" and "significantly damaged" material. According to the preamble, significant damage exists where damage is evenly distributed across 10 percent or more of a functional space or is localized over 25 percent of a functional space.

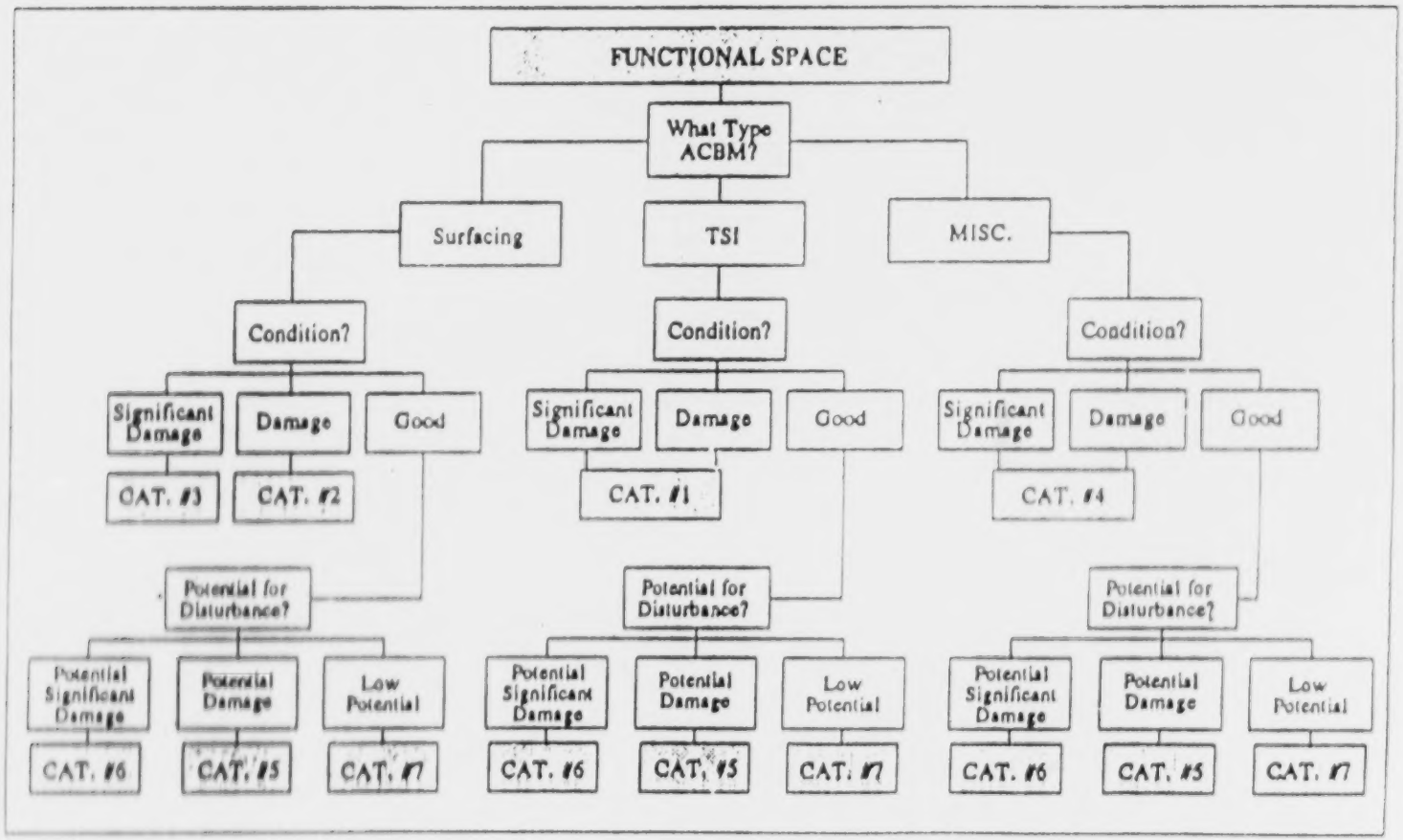
(See Example Form 4 at the end of this chapter for a form that may be used to show why ACBM was assigned to a particular category.)

The preamble goes on to state that material has potential for significant damage, as opposed to only potential for damage, if it is subject to major or continuing disturbance due to factors such as accessibility or, under certain circumstances, vibration or air erosion. If the accredited inspector determines that there is a high or strong likelihood of major disturbance due to accessibility, vibration, or air erosion, there is a potential for significant damage. If the likelihood of any of these factors occurring is moderate, there is only a potential for damage. If the likelihood of any of these factors occurring is low, the inspector should assign Physical Assessment Category No. 7 (any remaining friable ACBM or friable suspected ACBM) to the material.

Because the physical assessment is used to determine which response actions will be chosen to manage the asbestos, proper identification and assessment of ACBM are vital to the effective implementation of the AHERA program. The decision tree that follows can help determine the correct assessment category for material in a functional space *(See the Exercise at the end of this chapter for a brief exercise for determining the correct Physical Assessment Category for a functional space).*

Figure 5-1

Decision Tree to Determine
Physical Assessment Categories



The Inspection Report

The results of an AHERA inspection or reinspection must be documented in an inspection report. All decisions regarding ACBM in the LEA's buildings will be based on the information found in this report, so it is vital that the report information be correct. If materials are incorrectly identified as containing asbestos, the LEA will take on needless expense for preventive measures, while if materials are incorrectly identified as not containing asbestos, the LEA may expose building occupants to increased health risks and itself to legal liability.

Contents of the Inspection Report

Section 763.85 of the AHERA Rule lists the required elements of the inspection report:

General Inspection Information

- Date of the inspection
- Signature of each accredited person who conducts inspection-related activities
- Ideally, a copy of the accreditation certificate for each accredited person making the inspection; at minimum, the state of accreditation and accreditation number of each accredited person who conducts inspection-related activities.

Information on Sampling/Assumed ACBM

- Inventory of the locations of the homogeneous areas where samples are collected
- Exact location where each bulk sample is collected
- Dates that samples are collected
- Homogeneous areas where friable suspected ACBM is assumed to be ACBM
- Homogeneous areas where nonfriable suspected ACBM is assumed to be ACBM
- Description of the manner used to determine sampling locations
- Name and signature of each accredited inspector who collected the samples
- State of accreditation of each accredited inspector who collected the samples
- Accreditation number of each accredited inspector who collected the samples, if applicable

Identification and Assessment Information

- List of whether the homogeneous areas identified in the report are surfacing material, thermal system insulation, or miscellaneous material
- Assessments made of friable material and reasons for these assessments
- Name and signature of each accredited inspector making the assessment

- State of accreditation of each accredited inspector making the assessment
- Accreditation number of each accredited inspector making the assessment, if applicable

The inspection report should list the required elements in the order in which they are listed above to promote uniformity and ease of comprehension. The inspection report should also contain an introductory summary that briefly explains what will be found in the report. Documentation such as field data sheets and optional photographs should appear in appendices to the report.

(See the Inspection Report Compliance Checklist at the end of this chapter.)

Common Inspection Report Problems and Deficiencies

The designated person should ensure that the inspection report is complete. *Asbestos in Schools: Evaluation of the Asbestos Hazard Emergency Response Act: A Summary Report* identifies several areas in which inspection reports are often deficient. Examples include:

- Many inspection reports failed either to indicate areas where ACBM were present or did so incompletely.
- Vibration dampening cloth, duct insulation, fire doors and linoleum were not regularly identified as suspect ACBM.
- Eighty-two percent of school buildings had at least one ACBM unidentified in the original AHERA inspection.

The best time to review the inspection report for completeness is during a building walk-through, which is usually performed during the 6 month periodic surveillance inspection. Such problems as missing or confusing warning labels, improper identification of homogeneous areas, incomplete lists of suspect materials, and inaccurate or unclear sample locations may be identified during the walk-through. Correction of problems identified should be started immediately.

The designated person should be aware that an adequate number of samples must be collected in order to determine whether an area is considered asbestos-containing *(See Table 5-1 above)*. If an adequate number of samples was not collected, the area must be considered to be ACBM regardless of the results of the analyses. In such a situation, the management planner, who reviewed the inspection/reinspection report, may advise the LEA to either collect additional samples or may update the management plan to assume that the areas in question are ACBM.

Chapter 5 Summary
Key Points About the AHERA Inspection

An AHERA inspection must be conducted by an **accredited inspector.**

The inspector must identify all **homogeneous areas** of material that are suspected to contain asbestos. Homogeneous areas contain asbestos that is uniform (alike) in color and texture.

All material suspected to be ACBM must be assumed to be ACBM unless the homogeneous area is **sampled,** and the analysis of the samples shows them to be non-asbestos. Adequate number of samples must be taken or the area will be considered to be ACBM regardless of the results of the analyses.

Once the inspector has identified all ACBM in a building, he or she must perform a **physical assessment** of all TSI and friable ACBM. This involves categorizing the material into one of seven Physical Assessment Classifications.

The results of an AHERA inspection and the assessment must be documented in an **inspection report.** This report will be used by the management planner to make written recommendations on appropriate response actions.

Chapter 5 Forms

On the following are blank forms, similar to those used by AHERA accredited inspectors.

Form 1 requires that the inspector enter information pertaining to homogeneous areas of ***suspected and known ACBM*** in a school building. Using the inspection report, the inspector will: 1) list all of the homogeneous areas in the school buildings, 2) enter the number of linear or square feet for each area, 3) indicate whether the material is friable or non-friable, 4) enter the type of ACBM that is present, and 5) indicate whether the ACBM is assumed to be ACBM.

Form 2 requires that the inspector enter information in order to relate each homogeneous area to a functional space. Using the inspection report, the information entered on Form 1, and the building's floor plan, the inspector will 1) link the homogeneous areas to a functional space, 2) assign a number to each homogeneous area, 3) assign a letter to each functional space, and 4) create a key for the numbers and letters that are used.

Form 3 is representative of a bulk sampling log that should be in the inspection report.

Form 4 may be used to gather the information needed to show why a certain category was assigned to ACBM.

Example Form 1

Inspection Report: List of Homogeneous Areas

Project Name: _____
Address: _____

Area #	Area Description	Linear or Sq. Ft.	L S	Friable Y/N	Type S/T/M	ACBM Y/N

Example Form 2

Functional Spaces/Homogeneous Areas	
Building: _____	
Functional Space Letter	Homogeneous Areas by Number (Obtained from Form 1)
Key: L/S = Linear Feet/Square Feet S/T/M = Surfacing/Thermal/Miscellaneous	

Example Form 3

Bulk Sample Log

School:_____Date Sampled_____
Homogeneous Area_____Sampler's Name_____
Functional Space/Room:_____Accreditation No._____
Linear Feet:_____ Type of Suspect Material_____
Square Feet:_____ _____ Surfacing_____ TSI_____ Misc.
_____ Friable _____ Non-friable
Manner of Sampling:_____
AREA DESCRIPTION:_____

Number	Location

Example Form 4

Individual Assessment Form			
AREA #:_____ AHERA CATEGORY #:_____ DESCRIPTION:_____ 1. Location & Amount_____ _____ _____ 2. Condition, Type of Damage:_____ _____ _____ Severity of Damage:_____ _____ Extent/Spread of Damage:_____ _____ 3. Accessibility:_____ _____ _____ 4. Potential for Disturbance:_____ _____ _____ 5. Causes of Damage:_____ _____ _____ 6. Preventive Measures:_____ _____ _____			
TYPE NAME:		SIGNATURE:	
ACCREDITATION AGENCY:	STATE:	ACCREDITATION:	DATE ISSUED:

Inspection Report Compliance Checklist

This checklist is designed to enable you to determine if the inspection report is complete and contains each and every element required by law.

GENERAL:

____ 1. The date of the inspection
____ 2. The signature of each accredited person making the inspection
____ 3. The State of accreditation of each accredited person making the inspection
____ 4. If applicable, the accreditation number of each accredited person making the inspection

INVENTORY OF LOCATIONS:

____ 5. An inventory of the locations of the homogeneous areas where samples were collected
____ 6. The exact location where each bulk sample was collected
____ 7. The date(s) that each sample was collected
____ 8. The homogeneous areas where friable suspected ACBM is assumed to be ACBM
____ 9. The homogeneous areas where nonfriable suspected ACBM is assumed to be ACBM

SAMPLING:

____ 10. A description of the manner used to determine sampling locations
____ 11. The name and signature of each accredited inspector who collected the samples
____ 12. The State of accreditation of each accredited inspector who collected the samples
____ 13. If applicable, the accreditation number of each accredited inspector who collected the samples

MATERIALS IDENTIFIED IN HOMOGENEOUS AREAS:

____ 14. A list of whether the homogeneous areas identified are surfacing material, thermal system insulation, or miscellaneous material

ASSESSMENTS:

____ 15. Assessments made of friable material
____ 16. The name and signature of each accredited inspector who made the assessment
____ 17. The State of accreditation of each accredited inspector who made the assessment
____ 18. If applicable, the accreditation number of each accredited inspector who made the assessment

6 THE MANAGEMENT PLAN

Introduction

Once the accredited inspector has identified the ACBM in the building(s) and has documented this information in the inspection report, an accredited management planner will use the report to identify and address hazards or potential hazards relating to the friable ACBM identified. The information from the inspection report will become part of the management plan. The management plan, which is a site-specific guidance document that the LEA designated person must follow in managing the ACBM present in each school building, must be prepared by an accredited management planner. A management plan must be updated to keep it current with ongoing operations and maintenance, periodic surveillance, inspection, reinspections and response action activities.

Table 6-1 identifies the elements required to be in the management plan under § 763.93 of the AHERA Rule. These requirements are discussed in greater detail in the remainder of this chapter.

Table 6-1

Contents of the Management Plan

General Information

- List of the names and addresses of all school buildings
- Whether the school building contains friable ACBM, nonfriable ACBM, assumed friable ACBM or assumed nonfriable ACBM

Designated Person Information

- Name, address, and telephone number of the LEA designated person
- Course name, dates, and hours of training taken by the designated person

Inspector Information

- Date of inspection or reinspection
- Name and signature of each accredited person making the inspection or reinspection
- State and accreditation number of each accredited person making the inspection or reinspection (or copy of accreditation)

Information on Sampling/Assumed ACBM

- Blueprint, diagram, or written description of each school building that identifies clearly each location and approximate square or linear footage of homogeneous

areas where material was sampled for ACBM
- Exact location where each bulk sample was collected
- Date of collection of each bulk sample
- Homogeneous areas where friable suspected ACBM is assumed to be ACBM
- Homogeneous areas where nonfriable suspected ACBM is assumed to be ACBM
- Description of the manner used to determine sampling locations
- Name and signature of each accredited inspector collecting samples
- State of accreditation and accreditation number of each accredited inspector collecting samples (or copies of the accreditation certificates)

Analysis of Samples
- Copy of the analyses of any bulk samples collected and analyzed
- Name and address of any laboratory that analyzed bulk samples
- Statement that any laboratory used meets the accreditation requirements of § 763.87(a) of the AHERA Rule
- National Voluntary Laboratory Accreditation Program number (or certificate)
- Dates of any analyses performed
- Name and signature of the person performing each analysis

Physical Assessment Information
- Description of the assessments required by § 763.88 of the AHERA Rule of all friable ACBM and suspected ACBM assumed to be ACM.
- Name and signature of each accredited person making the assessments
- State of accreditation and accreditation number of each accredited person making the assessment (or copies of the accreditation certificates)

Response Action Information
- Recommendations made to the LEA by (an) accredited management planner(s) regarding response actions
- Name and signature of each person making the recommendations
- State of accreditation and accreditation number of each person making the recommendations (or copies of the accreditation certificates)
- Detailed description of preventive measures and response actions to be taken, including methods to be used, for any friable ACBM
- Locations where such measures and actions will be taken
- Reasons for selecting the response action or preventive measure
- Schedule for beginning and completing each preventive measure and response action

Information on ACBM Remaining after Response Actions
- A blueprint, diagram, or written description of any ACBM or suspected ACBM assumed to be ACBM that remains in the school once response actions are undertaken. This should be updated as soon as response actions are completed,

Information on Future Activities

- A plan for reinspection under § 763.85 of the AHERA Rule
- A plan for operations and maintenance (O&M) activities under § 763.91 of the AHERA Rule
- A plan for periodic surveillance under § 763.92 of the AHERA Rule
- Description of the management planner recommendations regarding additional cleaning under § 763.91(c)(2) of the AHERA Rule as part of an O&M program
- The response of the LEA to any recommendation for additional cleaning

Information on Required Notifications

- Copies of the notifications and description of steps taken to inform workers and building occupants (and their guardians) about inspections, reinspections, response actions, and post-response actions, including periodic surveillance, and the location and availability of the management plan on an annual basis

Periodic Surveillance Inspection Reports

Cost Estimate

- Evaluation of the resources needed to complete response actions and carry out reinspection, O&M activities, periodic surveillance and training

Consultant Information

- Name of each consultant who contributed to the management plan and accreditation certificates

Optional Information

- The LEA may require each management plan to contain a statement signed by an accredited management plan developer that such person has prepared or assisted in the preparation of such plan, or has reviewed such plan, and that such plan is in compliance with AHERA. The statement should not be signed by a person who, in addition to preparing or assisting in preparing the management plan, also implements (or will implement) the management plan.

(See the Management Plan Compliance Checklist at the end of this chapter.)

The Laboratory Report

AHERA requires that laboratories that perform the bulk material sampling analysis and final clearance air sample analysis using Transmission Electron Microscopy (TEM) be accredited. The National Institute of Standards and Technology (NIST) has developed an accreditation program for laboratories, known as the National Voluntary Laboratory Accreditation Program (NVLAP). This program replaces the older EPA interim laboratory proficiency program; after October 30, 1989, all laboratories accredited under the EPA interim laboratory proficiency program were required to become NIST

accredited. Laboratories performing analyses under AHERA must maintain appropriate NVLAP certification. If analyses of either bulk material samples collected during the inspection process or final clearance air samples collected after a response action and analyzed using Transmission Electron Microscopy (TEM) are performed by a laboratory without current NVLAP credentials, the analyses may not be used for AHERA compliance purposes.

Under § 763.87 of the AHERA Rule, a laboratory performing a bulk sample analysis must submit the following documentation for inclusion into the management plan:

- The name and address of each laboratory performing an analysis.
- The date of the analysis.
- The name and signature of the person performing the analysis. The name and signature requirements apply to the microscopist(s) who actually performed each analysis; it is recommended that the laboratory manager also sign the reports.
- Proof that the laboratory has received NVLAP accreditation. This proof should consist of a copy of the laboratory's NVLAP certificate, not just a statement that the laboratory is accredited. For laboratory reports prepared before the NVLAP program was started, proof of the laboratory's EPA interim accreditation is acceptable but should include the laboratory's EPA laboratory accreditation number.

Response Actions

In the management plan, the accredited management planner must recommend an appropriate response action (operations and maintenance, repair, encapsulation, enclosure, or removal) for all areas of thermal system insulation (TSI) and friable ACBM. The final decision on which action should be taken, however, rests with the LEA. Under AHERA, the response action to be taken must be "sufficient to protect human health and the environment." Once it is determined which response actions meet these criteria, the LEA may choose the action that is the "least burdensome."

AHERA identifies five possible response actions for managing asbestos in schools:

- **Operations and Maintenance (O&M) Program** -- This is a program of work practices designed to maintain friable ACBM in good condition and ensure cleanup of asbestos fibers previously released. An effective O & M program can prevent further release by minimizing and controlling friable ACBM disturbance or damage. *(See Chapter 8 for a complete description of the O&M Program.)*
- **Repair** -- This involves returning damaged ACBM to an undamaged condition or to an intact state by replacing limited sections or patching damaged areas.

- **Encapsulation** -- This involves the treatment of ACBM with a material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent the release of fibers. The encapsulant either creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant). Both types of encapsulants are applied to the material surface using airless spray equipment at low pressure to reduce release of fibers during the application.

- **Enclosure** -- This involves creating an airtight, impermeable, permanent barrier around ACBM to prevent the release of asbestos fibers into the air. The barrier is typically attached physically or sprayed on. For example, materials such as PVC or corrugated metal may be fastened around insulated piping, or a barrier may be constructed around asbestos fireproofing on structural members by spraying material that cures into a hard shell.

- **Removal** -- This involves the taking out or the stripping of substantially all ACBM from a damaged area, a functional space, or a homogeneous area in a school building.

Selecting the Appropriate Response Action

The LEA is required to implement an O&M program whenever any friable ACBM is present or assumed to be present in a building. An O&M program is not appropriate as an initial response action for any damaged or significantly damaged material, however. The flow charts on Figure 6-1 on the following page illustrate when each response action is appropriate.

Project Design

All persons who design response actions for schools or public and commercial buildings (including removal, encapsulation, enclosure, or repair -- other than small scale, short duration repairs) must be accredited as a project designer. A response action is defined by AHERA as a method that protects human health and the environment from friable ACBM. Activities which create a high probability that ACBM will be damaged or weakened to such an extent that it would be rendered friable are also considered response actions.

Although a written design is not mandated, EPA cannot recommend them strongly enough. To undertake a response action without the benefit of a written design plan to guide the work in progress is not only highly imprudent, but may unnecessarily expose the public to an asbestos fiber release and/or the building owner to certain liabilities. A written project design must be prepared by an accredited project designer. An accredited project designer is one who has received accreditation under AHERA by completing a prescribed training course for project designers and passing an exam (*See Chapter 9 for further information on accreditation*).

Final Air Clearance After Response Actions

Final clearance of a functional space after a response action to remove, encapsulate, or enclose ACBM or material assumed to be ACBM involves two steps: visual inspection and the collection and analysis of air samples.

Visual Inspection

A visual inspection involves visually examining the asbestos removal area for evidence that the abatement has been successfully completed, including thorough clean-up. Visual inspections are also an important means of determining acceptable completion of small-scale, short-duration O&M or repair operations.

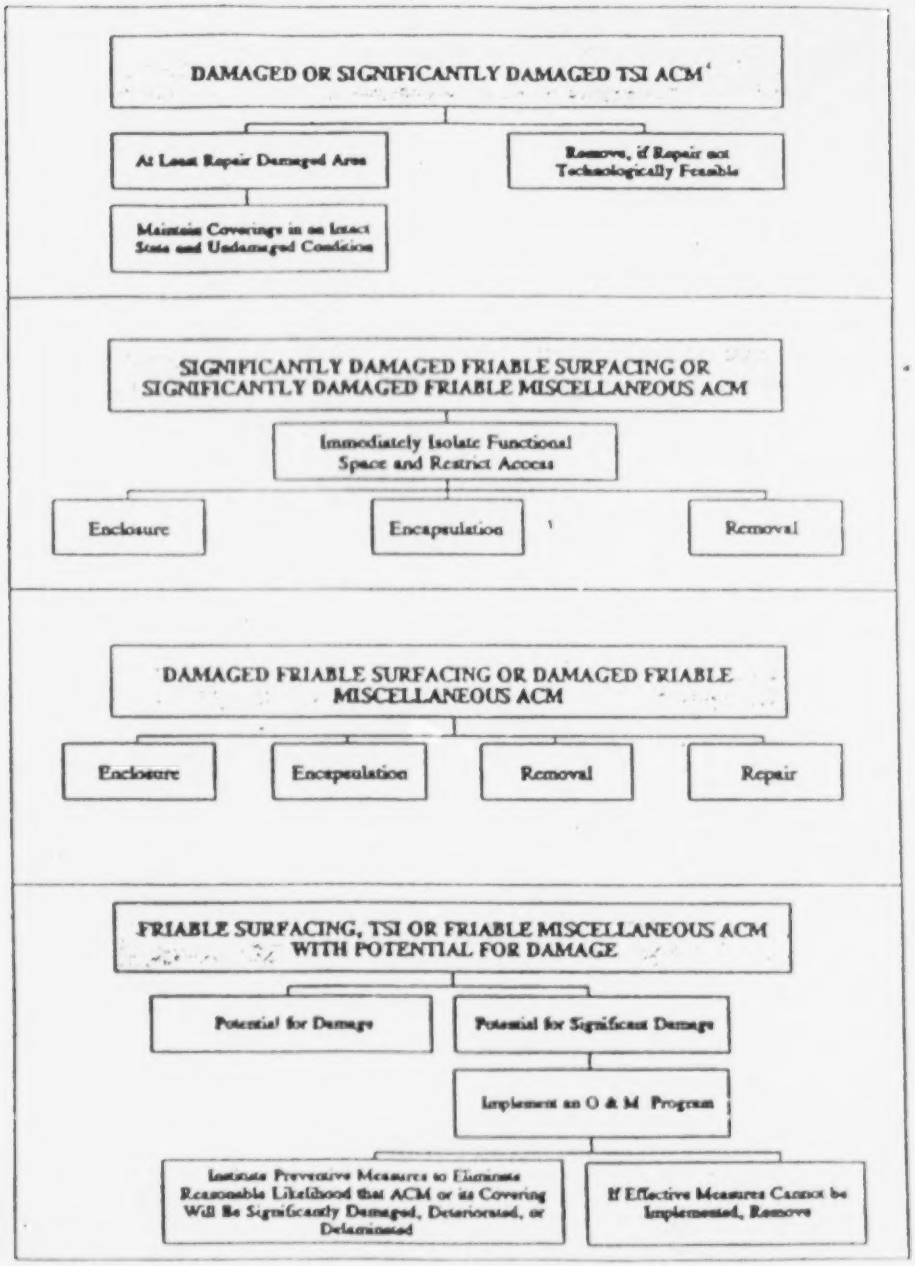
To avoid a potential conflict of interest, it is highly recommended that the visual inspection be performed by an inspector not affiliated with the abatement contractor or anyone else financially associated with the conducting of the asbestos response action.

The inspection should be conducted as rigorously as possible, with all spaces and surfaces where the abatement was conducted being extensively examined for residual ACBM debris. The inspection may involve:

- Scrutinizing every corner and crevice of the area within the containment barriers used to isolate the functional space for the response action
- Using a ladder to inspect hard-to-physically-reach areas
- Brushing or wiping surfaces to detect dust
- Using a flashlight beam to detect loose debris or airborne residue
- Using a damp cloth to detect dust
- Inspecting permanent fixtures in the area, such as ceiling tile grid bars, pipes, ducts, etc.
- Inspecting for asbestos-laden water, which may have leaked from the enclosure onto floor surfaces beneath the abatement area

Figure 6-1

Flow Charts of Possible Response Actions


DAMAGED OR SIGNIFICANTLY DAMAGED TSI ACM
At Least Repair Damaged Area
Remove, if Repair not Technologically Feasible
Maintain Coverings in an Intact State and Undamaged Condition
SIGNIFICANTLY DAMAGED FRIABLE SURFACING OR SIGNIFICANTLY DAMAGED FRIABLE MISCELLANEOUS ACM
Immediately Isolate Functional Space and Restrict Access
Enclosure
Encapsulation
Removal
DAMAGED FRIABLE SURFACING OR DAMAGED FRIABLE MISCELLANEOUS ACM
Enclosure
Encapsulation
Removal
Repair
FRIABLE SURFACING, TSI OR FRIABLE MISCELLANEOUS ACM WITH POTENTIAL FOR DAMAGE
Potential for Damage
Potential for Significant Damage
Implement an O & M Program
Institute Preventive Measures to Eliminate Reasonable Likelihood that ACM or its Covering Will Be Significantly Damaged, Deteriorated, or Delaminated
If Effective Measures Cannot be Implemented, Remove

BEST COPY AVAILABLE

- Examining surfaces for water and/or debris markings
- Checking crawl spaces on hands and knees; dirt floors may contain pulverized or impacted asbestos debris

The aim of the visual inspection is to ensure that:

- Seals on windows, doors, and vents remain in place during final air monitoring
- Isolation barriers separating the abatement area from non-abatement areas are in place
- No evidence of residue, debris, or dust is present in the abatement area

The presence of any visible residue on surfaces within the abatement area indicates a need for additional cleaning of the surfaces. If an area passes visual inspection but then fails to meet air sampling and analysis requirements after that inspection, the site must be recleaned and an additional visual inspection be conducted to detect any material that may have been uncovered or released during recleaning. Only after visual inspection clearance has been completed may final air sampling be done.

The results of the visual inspection should always be documented and signed by the person conducting the visual inspection.

Final Air Sampling and Analysis

Section 763.90 of the AHERA Rule requires that the LEA accomplish final air sampling and analysis of all removal, encapsulation, or enclosure projects by using the transmission electron microscopy (TEM) method, unless the project involves no more than 160 square feet or 260 linear feet of ACBM, in which case phase contrast microscopy (PCM) may be used. Note that no final air clearance is required for small-scale, short-duration O&M projects. (*See Appendix B of the AHERA Rule for information on the types of projects that qualify as small-scale, short-duration.*)

Sampling operations for airborne asbestos following an asbestos abatement action must be performed by qualified individuals completely independent of the abatement contractor to avoid possible conflict of interest. EPA recommends that the LEA obtain professional assistance to perform the sampling and analysis.

- The TEM Method

The TEM Method involves the collection of at 13 samples (five samples inside the functional space; five samples representative of air entering the abatement site; and three quality control "blank" samples). The air samples must be collected using "aggressive" methods or artificially disturbing the air in the functional space before and during sampling, as described in Appendix A, Section III(B)(7)(d) of the AHERA Rule. In most cases, only the 5 samples collected inside the functional space will be analyzed. If the average result of the five samples collected inside the functional space

is less than 70 structures per square millimeter (70 s/mm^2), the response action is considered complete.

If the Z-test calculation is used, all 13 samples will be needed. The response action may be considered complete when the average concentration of asbestos of the five air samples collected within the affected functional space and analyzed by the TEM method is not statistically significantly different from the average asbestos concentration of the five air samples collected outside the affected functional space and analyzed in the same manner, and the average asbestos concentration of the three quality control samples is below 70 s/mm^2. If the average of the three quality control samples exceeds 70 s/mm^2, the test is voided and resampling must be done. If the difference in average asbestos concentration between the indoor and outdoor samples is statistically significant, the contractor must reclean the functional space and resampling must be done -- usually at the contractor's expense.

- The PCM Method

The PCM method may only be used on functional spaces affecting ACBM up to 160 square feet or 260 linear feet or less. In all areas affecting larger amounts of ACBM, the TEM method must be used.

The PCM method involves collecting at least five samples inside the work area by aggressive methods as described in Appendix A, Section III (B)(7)(d) of the AHERA Rule and having them analyzed on a PCM microscope. Unlike the TEM method, the PCM method does not call for the samples to be averaged; each sample stands on its own. The clearance standard for PCM is 0.01 fibers per cubic centimeter of air (0.01 f/cc). If all five samples pass this standard, the response action is considered complete. If even one sample fails to pass the standard, the contractor must reclean the area and resampling must be done.

(*See the Final Air Clearance Documentation Checklist at the end of this chapter; see Chapter 10 for a further discussion on documenting final air clearances.*)

Implementation of the Management Plan

The LEA designated person is responsible for ensuring that the management plan is implemented and updated in a timely manner. Table 6-2 below identifies some of the activities and time requirements that must be met to achieve compliance with the AHERA Rule. If the designated person determines that an element has not been implemented as required, it must be implemented as soon as possible to limit exposure and possible enforcement actions against the school.

Table 6-2

Implementation Requirements for Operations Associated with the Management Plan	
Requests	**Deadline**
The Management Plan	The plan must be kept current with ongoing O & M, periodic surveillance, inspection, reinspection, and response action activities, including updating the locations of ACBM after response actions and O & M activities.
O&M Program	Must begin immediately upon the identification of any friable ACBM present or assumed to be present in the building.
O&M Training	In order to work in a building that may contain asbestos, custodial workers and maintenance staff members must have completed the 2-hour training class described in § 763.92(a)(1) within 60 days of employment. Workers must have completed the 14-hour training requirement described in § 763.92(a)(2) to conduct O&M activities which may disturb ACBM.
Periodic Surveillance	Under § 763.92(b)(1) of the AHERA Rule, periodic surveillance must be conducted at least once every 6 months after a management plan is in effect.
Warning Labels	Must be posted as soon as possible after identification of ACBM in any routine maintenance area.
(cont.)	

Implementation Requirements for Operations Associated with the Management Plan (cont.)	
Requests	**Deadline**
Management Plan Availability for Public Review	The plan must have been made available for public review in the administrative office of the LEA on the date on which it was submitted to the Governor for review. Notification of the plan availability must be made annually.
Isolate a Functional Space with Significantly Damaged Friable Surfacing ACBM	Must be isolated immediately and access restricted if such measures are needed to protect human health and the environment.
Repair and Maintain Damaged or Significantly Damaged TSI	Must begin as soon as a management planner and LEA determine that these conditions exist.

Common Management Plan Problems and Deficiencies

EPA has found two common problems in management plans:

- Although management plans were generally complete, in many instances the location of homogeneous materials was not described clearly, and the material classification (TSI, surfacing material, or miscellaneous) was often incorrect.

- Many management plans were not "user-friendly" and required specialized instruction to understand. Because the management plan is the basis for all asbestos work done in the school and is a guide for anyone who could disturb ACBM during maintenance or custodial work, EPA recommends that the LEA review the management plan for clarity and usability. In doing so, the LEA should ensure that the response actions described in the plan are specific to the site and to the ACBM involved, and that the implementation schedule is clear.

Management plans also often omit the description of final air sample clearance locations. The designated person should check the management plan to see that all clearance criteria were met and documented. Because of the complexity of the sampling requirements, it is recommended that a professional consultant/air monitoring firm be retained to assist in this activity.

FREQUENT PROBLEMS WITH MANAGEMENT PLANS

The Asbestos Management Plans (Plan) should be considered "living" document. ***Some Plans are left exactly the same as they were when they were created, with no updates whatsoever***. This is particularly true with respect to required records of periodic surveillances, annual notifications, response actions or fiber releases, and for records of the two-hour and sixteen-hour training for school employees and maintenance workers. In fact, the ***administrative staff at individual schools are sometimes unaware of the existence of management plans and/or do not know where the school's copy of the plan is kept***.

Copies of all pertinent certification credentials for AHERA inspectors, management planners, project designers, workers and supervisors who have participated in any response actions are required to be in the management plan, but ***are not always included***. Also ***proper documentation of air samplers' and laboratories' accreditations are sometimes missing*** from Plans.

Homogeneous areas are often not clearly (and frequently are not properly) defined on the basis of color, texture, size. Plaster and sheetrock are probably the most often overlooked materials which are likely to comprise major areas of suspected asbestos-containing building materials (ACBM). ***Sampling locations within the individual homogenous areas are often not described precisely*** enough to provide for any relocation of individual original sampling sites with any degree of certainty.

Frequently ***insufficient numbers of samples are collected from individual homogeneous areas*** (the correct minimum number being dependent upon the type of building material and the homogeneous area size), and the sites for the sampling which was done may have been selected in a manner other than as is set forth in the management plan for how sampling locations were to have been determined. Also, where ***warning signs*** are required, they may be ***missing***, or if present, they may not employ the prescribed text.

Sometimes ***functional areas are not taken into consideration in the preparation of assessment and response actions recommendations***. Also recommended response actions may not have been carried out according to schedules shown in the management plans and explanations or changes in the schedules may be absent.

Portable buildings on school grounds are sometimes overlooked in management plans, or these units may have been moved onto or off of a school's grounds without the school's management plan having been updated.

Chapter 6 Summary
Key Points About the Management Plan

The management plan is a **site-specific guidance document** that the LEA designated person must follow in managing the ACBM present in a school building.

The management plan must be prepared by an **accredited management planner** and must be updated in a timely manner.

The management plan must include the documentation required under § 763.87 of the AHERA Rule for each laboratory performing a bulk sample analysis and the results of each analysis.

In the management plan, the management planner must recommend an **appropriate response action** (operations and maintenance, repair, encapsulation, enclosure, or removal) for all areas of TSI and friable ACBM (including ACBM which has the potential of becoming friable).

All of the initial response actions implemented to control friable asbestos require a **project design** specifying how to conduct the abatement project.

Final air clearance of a functional space after a response action to remove, encapsulate, or enclose ACBM involves a **visual inspection** and the collection and analysis of **air samples.**

Final air sampling must be done using the transmission electron microscopy (TEM) method, unless the project involves no more than 160 square feet or 260 linear feet, in which case phase contrast microscopy (PCM) may be used.

The LEA designated person is responsible for ensuring that the activities related to the management plan are implemented and that the management plan is updated in a timely manner.

Table 6-4: Management Plan Compliance Checklist

This checklist is designed to enable you to determine if a management plan contains each and every element required by law. This checklist is for management plans created for inspections completed on or after December 14, 1987. Unless otherwise noted, all statutory references are to the AHERA Rule.

GENERAL INFORMATION

___ 1. List of the name and address of each school building
___ 2. Whether the school building contains friable ACBM, nonfriable ACBM, and friable and nonfriable ACBM assumed to be ACBM

DESIGNATED PERSON INFORMATION

___ 3. The name, address, and telephone number of the designated person
___ 4. The course name, dates, and hours of training taken by the designated person to carry out his or her duties
___ 5. Signed statement by the AHERA designated person that the LEA responsibilities under AHERA Rule has been or will be met

INSPECTOR INFORMATION

___ 6. The date of inspection or reinspection
___ 7. The name and signature of each accredited person making the inspection or reinspection
___ 8. The State, accreditation number, and name of training provider for each accredited inspector making the inspection or reinspection (copy of certificate is ideal)

SAMPLING INFORMATION

___ 9. A blueprint, diagram, or written description of each school building that identifies clearly each location and approximate square or linear footage of homogeneous areas where material was sampled for ACM
___ 10. The exact location where each bulk sample was collected
___ 11. The date of collection of each bulk sample
___ 12. The homogeneous areas where friable suspected ACBM is assumed to be ACBM
___ 13. The homogeneous areas where nonfriable suspected ACBM is assumed to be ACBM
___ 14. A description of how sampling locations were determined
___ 15. The name and signature of each accredited inspector who collected the samples
___ 16. State, accreditation number and name of training provider of each accredited inspector who collected the samples (copy of accreditation certificate is ideal)

Management Plan Compliance Checklist (cont.)

ANALYSIS OF SAMPLES

___ 17. A copy of the analyses of any bulk samples collected and analyzed
___ 18. The name and address of any laboratory that analyzed bulk samples
___ 19. A statement that any laboratory used meets the accreditation requirements of § 763.87(a) (copy of the accreditation is ideal)
___ 20. The dates of any analyses performed
___ 21. The name and signature of the person performing each analysis

PHYSICAL ASSESSMENT INFORMATION

___ 22. A description of the assessments required by § 763.88 of all friable ACBM and suspected ACBM assumed to be ACBM.
___ 23. The name and signature of each accredited person making the assessments
___ 24. The State, accreditation number and name of training provider for each person making the assessments (copy of certificate is ideal).

RESPONSE ACTION INFORMATION

___ 25. Recommendations made to the LEA regarding response actions
___ 26. The name and signature of each person making the recommendations
___ 27. The State, accreditation number, and name of training provider for each person making the recommendations (copy of certificate is ideal).
___ 28. A detailed description of preventive measures and response actions to be taken, including methods to be used, for any friable ACBM
___ 29. The locations where such measures and actions will be taken
___ 30. The reasons for selecting the response action or preventive measure
___ 31. A schedule for beginning and completing each preventive measure and response action

INFORMATION ON ACBM REMAINING AFTER RESPONSE ACTIONS

___ 32. A blueprint, diagram, or written description, updated as response actions are completed, of any ACBM or suspected ACBM assumed to be ACBM that remains in the school once response actions are completed

INFORMATION ON OTHER ACTIVITIES

___ 33. A plan for reinspection and copies of the reports required under § 763.85

Management Plan Compliance Checklist (cont.)

___ 34. A plan for operations and maintenance (O&M) activities under § 763.91
___ 35. A plan for periodic surveillance and copies of the reports (see § 763.92)
___ 36. A description of the management planner recommendations regarding additional cleaning under § 763.91(c)(2) as part of an O&M program and documentation of cleaning
___ 37. A description of steps taken to inform workers and building occupants about inspections, reinspections, response actions, and post-response actions, including periodic surveillance
___ 38. An evaluation of the resources needed to complete response actions and carry out reinspection, O&M activities, periodic surveillance and training
___ 39. The name of each consultant who contributed to the management plan
___ 40. With respect to each consultant who contributed to the management plan, a copy of the accreditation certificate (or name of training provider, State and accreditation number)
___ 41. The response of the LEA to any recommendation for additional cleaning

Checklist of Final Air Clearance Documentation

This checklist will indicate whether each final clearance was properly documented.

___ 1. The name and signature of any person collecting any air sample required to be collected at the completion of a response action
___ 2. The locations where those samples were collected
___ 3. The name and address of the laboratory, analyzing the samples
___ 4. The date(s) of analysis
___ 5. The results of analysis
___ 6. The method of analysis
___ 7. The name and signature of the person performing the analysis
___ 8. Evidence that the laboratory is NVLAP accredited

7 REINSPECTIONS AND PERIODIC SURVEILLANCE

Introduction

Every three years after implementation of a management plan, an accredited inspector must conduct a reinspection of all friable and nonfriable known or assumed ACBM in every school building in order to determine if there has been any change in the condition of the ACBM. An accredited management planner must then review the reinspection report to identify any new hazard potential and revise the management plan to address newly identified hazards. Based on the updated data, new response actions to address these hazards must be selected, and these actions must be carried out in a timely manner.

The reinspection process presents an ideal time for an accredited inspector and management planner to address any problems found in the initial inspection report and management plan. EPA's document *A Guide to Performing Reinspections Under the Asbestos Hazard Emergency Response Act* (AHERA) (March 1992) is useful in planning and assessing the reinspection requirements.

Inspector Responsibilities

Under § 763.85(b) of the AHERA Rule, in conducting a reinspection, the inspector must:

- Visually reinspect and reassess the condition of all friable known or assumed ACBM.
- Visually inspect material that was previously considered nonfriable and touch the material to determine whether it has become friable since the last inspection or reinspection.
- Identify any homogeneous areas in which material has become friable since the last inspection or reinspection.
- Bulk samples may be collected and submitted for analysis for any homogeneous area of newly friable material that is already assumed to be ACBM.
- Perform a physical assessment, in accordance with § 763.88 of the AHERA Rule, of the condition of the newly friable material in areas where samples are collected and of newly friable materials in areas assumed to be ACBM.
- Reassess the condition of friable known or assumed ACBM previously identified.

- Record and submit the following information for inclusion in the management plan to the LEA designated person within 30 days of the reinspection:

  -- Date of the reinspection
  -- Name and signature of the person conducting the reinspection
  -- State, accreditation number, and training provider name for any person conducting the reinspection (copy of certificate is ideal)
  -- Exact locations where samples were collected during the reinspection
  -- Description of the manner used to determine sampling locations
  -- Name and signature of each accredited inspector who collected the samples
  -- State, accreditation number, and training provider name for each inspector who collected the samples (copy of certificate is ideal)
  -- Any assessments or reassessments made of friable material
  -- Name and signature of the accredited inspector making the assessments
  -- State, accreditation number and training provider name for each inspector making the assessments (copy of certificate is ideal)

Management Planner Responsibilities

Once a reinspection is completed, the management planner must:

- Review the results of the reinspection. This includes reviewing the original inspection report, periodic surveillance records, and the completed reinspection forms and report. The management planner should conduct school visits and gather other information so that he or she can make effective response action recommendations.

- Make written response action and preventive measure recommendations for each area of friable surfacing and miscellaneous ACBM and each area of TSI ACBM. The management planner should determine whether additional cleaning is necessary and, if so, specify how, when, and where to perform cleaning. The management planner should also include an implementation schedule for the recommended activities and make an estimate regarding the resources (cost, personnel, equipment, etc.) needed to conduct the activities.

- Review the adequacy of the Operations & Maintenance Program.

- The recommendations should include a record of the name, signature, State, accreditation number and training provider name for the management planner (copy of certificate is ideal) and the date on which the management planner submitted the recommendations.

> For further information on reinspection requirements, review *A Guide to Performing Reinspections Under the Asbestos Hazard Emergency Response Act (AHERA)* (March 1992).

Periodic Surveillance

At least once every six months after a management plan is in effect, the LEA must conduct periodic surveillance in each building that contains ACBM or is assumed to contain ACBM. The surveillance does not have to be conducted by an accredited person, but it should be conducted either by the LEA designated person (if he or she is trained) or by someone who is appropriately trained on asbestos (such as a maintenance person).

Periodic surveillance involves a visual inspection of all areas that are identified in the management plan as ACBM or assumed ACBM. In evaluating each homogeneous area, the person conducting the surveillance must visually inspect all areas identified in the management plan as ACBM or suspected ACBM and record whether there are any changes in the condition of the material (including if there are no changes). The date of the surveillance, the name of the person conducting the surveillance, and any change in condition of the ACBM or assumed ACBM must be documented and included in the management plan within a reasonable amount of time, such as 30 days from the periodic surveillance.

Chapter 7 Summary
Key Points About Reinspections and Periodic Surveillance

As long as any ACBM remains in a school building, the building must be **reinspected** at least once every three years.

The reinspection and assessments/reassessments must be conducted by an **accredited inspector**. The results of the inspection must be submitted to the Designated Person within 30 days to include into the management plan.

The **management planner** must: 1) review the results of the reinspection, 2) make written response action and preventive measure recommendations for each area of friable surfacing and miscellaneous ACBM and each area of TSI ACBM, 3) determine whether additional cleaning is necessary and, if so, specify how, when, and where to perform cleaning, 4) include an implementation schedule for the recommended activities and make an estimate regarding the resources needed to conduct the activities, and 5) review the adequacy of the Operations & Maintenance Program.

At least once every six months after a management plan is in effect, the LEA must conduct **periodic surveillance** in each building that contains ACBM or is assumed to contain ACBM.

8 THE OPERATIONS AND MAINTENANCE PROGRAM

Introduction

As discussed in Chapter 6, the management planner is responsible for recommending appropriate response actions for managing ACBM found in a school building. An operations and maintenance (O&M) program must be implemented whenever any asbestos-containing building materials are found in a the school building. The purpose of the O&M program is to prevent the release of asbestos fibers through careful management of asbestos-containing building materials.

> *Managing Asbestos in Place, A Building Owner's Guide to Operations and Maintenance Programs for ACM* (the "Green Book") offers important information on how to implement an O&M program effectively.

Objectives of the O&M Program

An O&M program consists of a set of procedures and practices for operating and maintaining a building to keep it as free of asbestos contamination as possible. The program should be designed specifically to address the ACBM present in the building involved.

An O&M program has three main objectives:

- Clean up existing contamination.
- Minimize future fiber release by controlling access to ACBM and instituting proper work practices.
- Properly maintain the ACBM until it is removed.

Since National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations (*See Chapter 11 for a discussion of NESHAP*) require that friable and nonfriable ACBM which is likely to become friable be removed from buildings before demolition, the O&M program is not a permanent solution. In addition, the asbestos NESHAP may regulate the removal of asbestos as part of a renovation. It is also not a means by which full-scale asbestos abatement can be accomplished. The intentional disturbance of ACBM should be limited to the repair or removal of small areas of significantly damaged ACBM or to small areas where removal is necessary to make maintenance or minor renovation activities easier. Some small scale, short duration activities may be subject to asbestos NESHAP requirements if enough ACBM will be disturbed during a calendar year. Larger abatement projects that require extensive planning and technical expertise may not be part of the AHERA O&M program.

Limited encapsulation and enclosure could be used to enhance an O&M program by reducing the likelihood of contact with the ACBM, however.

Required Elements of An O&M Program

Under § 763.91 of the AHERA Rule, the LEA must ensure that the O&M program involve the following elements:

- Cleaning
- Specialized work practices and procedures for O&M activities disturbing friable ACBM
- Training
- Emergency Response Procedures

Cleaning

All areas of a building where friable ACBM and suspected ACBM, or significantly damaged TSI ACBM is present must be cleaned at least once after the completion of the AHERA inspection. It must also be cleaned before the initiation of any response action (other than O&M activities or repair). The exception would be where the building had been cleaned using similar methods within the previous six months. The cleaning must include the following:

- HEPA-vacuuming or steam-cleaning all carpets
- HEPA-vacuuming or wet-cleaning all other floors and all other horizontal surfaces
- Disposing of all debris, filters, mopheads, and cloths in sealed, leak-tight containers

The management planner may also recommend that additional cleaning be performed. The methods and frequency of any additional recommended cleaning should be included in the management plan.

Specialized Work Practices and Procedures

The LEA must ensure that the following procedures are followed for any O&M activities disturbing friable ACBM:

- Restrict entry into the area by persons other than those necessary to perform the maintenance project.
- Post signs to prevent entry by unauthorized persons.

- Shut off or temporarily modify the air-handling system and restrict other sources of air movement.
- Use work practices or other controls, such as wet methods, protective clothing, HEPA vacuums, mini-enclosures, and glove bags, as necessary to inhibit the spread of any released fibers.
- Clean all fixtures or other components in the immediate work area.
- Place the asbestos debris and other cleaning materials in a sealed, leak-tight container.

Training

Within 60 days of hire, maintenance and custodial staff who may work in a building that contains ACBM must receive at least two hours of asbestos awareness training. Those members of the maintenance and custodial staff who conduct any activity that will disturb ACBM must receive an additional 14 hours of training. Other state and local training requirements may apply. *(See Chapter 9 for further information on training requirements.)*

Emergency Response Procedures

As long as ACBM remains in a building, there is a risk of a fiber release episode. Custodial and maintenance workers should be aware of this and should always report any of the following occurrences to the LEA designated person:

- Any debris found on the floor or other horizontal surface
- Any water or physical damage to the ACBM
- Any other evidence of possible fiber release

There are two types of fiber release episodes: minor episodes and major episodes. The specific procedures that must be followed depend on which type of episode occurs.

Minor Fiber Release Episode

A minor fiber release episode consists of the falling or dislodging of three square or linear feet or less of friable ACBM. Section 763.91(f)(1) of the AHERA Rule requires that when such an event occurs, the LEA must ensure that:

- The debris is thoroughly saturated using wet methods
- The area is cleaned
- The asbestos debris is placed in a sealed, leak-tight container
- The area of damaged ACBM is repaired with such materials as asbestos-free spackling, plaster, cement, or insulation; sealed with latex paint or an

encapsulant; or an appropriate response action is implemented as required by § 763.90 of the AHERA Rule

When a minor fiber release episode occurs, AHERA allows the designated person to assign an appropriately trained O&M in-house team to clean up the debris and make repairs as soon as possible. *(See Chapter 9 on training requirements.)* Note, however, that local regulations may be more stringent than the AHERA requirements.

Major Fiber Release Episode

A major fiber release episode consists of the falling or dislodging of more than three square or linear feet of friable ACBM. Section 763.91(f)(2) of the AHERA Rule requires that when such an episode occurs, the LEA must ensure that:

- Entry into the area is restricted and signs posted to prevent entry into the area by persons other than those necessary to perform the response action.
- The air-handling system is shut off or temporarily modified to prevent the distribution of fibers to other areas in the building.
- The response action for any major fiber release episode is designed by persons accredited to design response actions and conducted by persons accredited to conduct response actions.

After a response action is implemented to manage a major fiber release episode, the final air clearance requirements of AHERA must be met before the response action is considered complete. *(See Chapter 6 on the final air clearance requirements.)*

Major and minor fiber-release episodes must be documented and included in the management plan regardless of whether the LEA uses in-house staff or an outside asbestos abatement contractor to implement an appropriate response action. If an outside contractor is used, be sure that the contractor's crew has been properly trained or certified before signing a contract.
(See the Fiber Release Episode Report at the end of this chapter.)

Other Elements of an O&M Program

In addition to the elements required by § 763.91 of the AHERA Rule, other elements are either recommended or required by the rule or related regulations. These include:

- Notification
- Labeling
- Employee Protection and Medical Surveillance
- Maintenance and Renovation Permit System
- Special Work Practices for Maintenance Activities
- Special Work Practices for Renovation/Remodeling

Notification

Once ACBM is identified or assumed to be present in a building, the LEA must provide an annual ***written*** notification to building occupants, employees, and parents on the locations of asbestos-containing building materials in the school buildings, the availability of the asbestos management plan, and recent and upcoming asbestos activities, such as abatement projects, reinspections, etc. Other types of information to include in the notification are: what asbestos is and how it is typically used; the health effects associated with asbestos exposure; the type(s) of ACBM present in the building; the location(s) of these materials; how individuals can avoid disturbing the ACBM; how damage is recognized and to whom it should be reported; how custodial and maintenance personnel are dealing with these materials to prevent fiber release; the asbestos-related training for custodial and maintenance personnel; the steps that will be taken to protect the health and safety of building occupants; and the name and telephone number of the LEA designated person responsible for asbestos-related activities in the building.

Such a notification alerts affected parties to a potential hazard in the building. Building occupants, employees, and others who are aware of the presence of ACBM are less likely to disturb the material and cause fiber release.

Notification of building occupants, employees, parents and others is best accomplished through distributing written notices, which may be tailored to specific parties. A common practice is to publish the notification in the school's newsletter, which is distributed to school employees and parents. The designated person must document the notification process and maintain records of all notifications made.

Labeling

Under § 763.95 of the AHERA Rule, the LEA must attach a warning label immediately adjacent to any friable and nonfriable ACBM and suspected ACBM that is located in routine maintenance areas (such as boiler rooms) at each school building. Such material includes friable ACBM that was responded to by a means other than removal (e.g., encapsulation) and ACBM for which no response action was carried out.

The labels must be prominently displayed in readily visible locations, must be in print that is readily visible due to its large size or bright color, and must remain posted until the ACBM that is labeled is removed. The warning label must read:

> CAUTION: ASBESTOS. HAZARDOUS. DO NOT DISTURB WITHOUT PROPER TRAINING AND EQUIPMENT.

Unlike notification, labeling is not intended as a way to disseminate general information. Instead, it is a last line of defense to prevent unprotected individuals from unknowingly disturbing ACBM.

Employee Protection & Medical Surveillance Programs

The OSHA Asbestos Standard for the Construction Industry and the EPA Worker Protection Rule explain when employees are required to wear a negative-pressure respirator and must be involved in a medical surveillance program (see also OSHA Asbestos Standard for General Industry). The purpose of a medical surveillance program is to determine whether or not an employee is healthy enough to wear a respirator and to detect any health changes in an employee's body resulting from working in asbestos-contaminated areas. Changes in health may indicate the onset of an asbestos-related disease.

In addition, any employee who works in an environment where fiber levels are at the permissible exposure limit or higher or who wears a negative-pressure respirator as part of his or her job must participate in a respiratory protection program. The only way to determine whether these fiber levels exist is to collect air samples during projects that disturb ACBM. In an O&M program, the use of negative-pressure respirators will make it necessary for most custodial and maintenance workers to participate in both the medical surveillance program and the respiratory protection program. Even if fiber levels are below the permissible exposure limit described above, it is strongly suggested that an LEA establish these programs and require that employees wear respirators any time they are likely to disturb ACBM.

Maintenance & Renovation Permit System

One of the most difficult tasks that the LEA designated person faces is minimizing accidental disturbances of ACBM during maintenance and renovation operations. One way that a designated person can control such disturbances is by establishing a permit system where all work orders or requests are processed through the designated person.

In a permit system, all requests for maintenance or renovation activities are given to the designated person before a work order to proceed is issued. The designated person then checks the management plan for information about the presence of ACBM where work is to be performed and physically inspects the area in question to make sure that the records reflect actual conditions. If no asbestos is present, the designated person can sign and issue the work order. If ACBM is present, the designated person can sign the work order and then either ensure that trained maintenance or renovation workers are properly equipped to handle the ACBM or dispatch an "emergency response" team to remove the ACBM. In situations where there are large amounts of ACBM, maintenance or renovation work that does not have to be done immediately should be postponed until the ACBM in the area can be removed by an accredited

contractor. The permit system should be in place for all facility maintenance work conducted by the LEA staff, outside contractors, and outside short-term workers.

When outside contractors or short-term workers are likely to come into contact with ACBM in a school building, they must be notified of the locations of ACBM or suspected ACBM in the building. This notification should be documented. These workers should have documentation of appropriate training, should they disturb ACBM during their work. Note that State licensing requirements vary.

(See Example Form 5 at the end of this chapter for an example of a maintenance and renovation permit application.)

Special Work Practices for Maintenance Activities

In buildings where ACBM is present, routine maintenance activities, such as work on light fixtures, plumbing fixtures and pipes, air registers, HVAC ducts, and other accessible parts of a building's utility systems, can disturb ACBM and raise levels of airborne asbestos. As a result, maintenance workers should be instructed not to perform any maintenance work that could disturb ACBM unless they are appropriately trained and use specific work practices. These work practices should be tailored to reflect the likelihood that an activity will disturb the ACBM and cause fibers to be released. In determining which work practices should be followed, activities should be placed in one of four categories:

- **Contact with ACBM Unlikely** -- In some buildings with ACBM, many routine maintenance activities can be conducted without contacting the ACBM. Changing a light bulb in a fixture that has asbestos-containing acoustical plaster nearby can usually be performed without jarring the fixture, for example. *(Note that under the AHERA Rule, the top of the fixture should already have been wet-cleaned to remove settled fibers.)* In such situations where contact with ACBM is unlikely, the only precaution other than normal care generally necessary is to ensure that respirators and a HEPA vacuum are available if needed. These do not have to be taken to the site of the project; they should just be available at a known location in the building.

  When maintenance is performed in parts of the building that are free of ACBM, no special precautions are usually necessary. An exception would be work in an area containing no ACBM that causes vibrations to be transferred to a location where ACBM is present.

- **Accidental Disturbance of ACBM Possible** -- Where routine maintenance and repair activities are conducted on fixtures or system parts that are located near friable ACBM, maintenance workers may unintentionally disturb the ACBM and release asbestos fibers. Maintenance work on ventilation ducts in an air-handling room where asbestos fireproofing is on the structural beams could

accidentally disturb the fireproofing, for example.

For a discussion of the work practices needed where an accidental disturbance of ACBM is possible, see the Green Book.

- **Disturbance of ACBM Intended or Likely** -- Some maintenance and repair activities will make ACBM disturbance almost unavoidable. Installing new sprinkler or piping systems will make it necessary to hang pipes from structural members or from the ceiling, and if the beams or ceilings are insulated with ACBM, the ACBM will be scraped away to install hangers. Similarly, pulling cables or wires through spaces with ACBM or ACBM debris is likely to dislodge pieces of the ACBM or disturb ACBM debris and dust. Any time ceiling tiles are moved to allow for entry into the space above a suspended ceiling, settled dust on top of the tiles will be recirculated into the air. If the beams or decking above the ceiling are covered with ACBM, the dust is likely to contain asbestos fibers.

  A designated person should not allow such intentional disturbances of ACBM to proceed in an uncontrolled manner. The designated person should ensure that the elements required under § 763.91 of the AHERA Rule to be part of an O&M program are implemented effectively and that the regulatory requirements of the EPA Worker Protection Rule and the OSHA Asbestos Standard for the Construction Industry are followed.

- **A Large Amount of ACBM Will be Disturbed** -- If the maintenance work is part of general building renovation, federal regulations may require that ACBM be removed before the project begins. Even if smaller amounts of ACBM are to be disturbed, building owners should consider removing all ACBM from the area of the building where the maintenance work is planned. Typically, an outside abatement contractor would be hired for the removal project before the maintenance work begins. If the LEA decides to use its own staff to remove the ACBM, these workers must be fully trained and accredited in asbestos abatement. *(See Chapter 9 for information on the training and accreditation requirements for asbestos abatement.)*

Maintenance of Vinyl Asbestos Tile

(Revised from a "Guidelines for the Maintenance of Asbestos-Containing Floor Coverings" developed by Rhode Island Department of Health and the Environmental Protection Agency, New England)

Vinyl Asbestos Tile (VAT) is the most prevalent source of asbestos containing material in our schools and most likely will be for years to come. Although VAT is considered non-friable, the frictional forces exerted on these materials during routine floor-care maintenance operations can release asbestos fibers.

The principle types of floor covering maintenance performed routinely on resilient floor tiles include:

1) spray-buffing and dry burnishing; and
2) wet scrubbing and stripping followed by refinishing.

The following are guidelines on the maintenance of asbestos-containing floor coverings. When properly implemented, these guidelines should help you reduce the potential for the release of asbestos fibers into the air. You may want to keep a copy of these guidelines in the Operations and Maintenance section of your AHERA Management Plan.

Stripping of Vinyl Asbestos Floor Coverings

Training

Custodial and maintenance personnel who are responsible for the care and maintenance of asbestos containing floor coverings should be thoroughly trained to safely and properly operate the machines, pads and floor care chemicals used at the facility.

Frequency of Stripping

Stripping of vinyl asbestos floor coverings should be done as infrequently as possible (e.g., once per year maximum and preferably when the building is unoccupied). Excessive stripping of floors using aggressive techniques will result in increased levels of asbestos fibers in the air.

Prior to Stripping

Prior to machine operation, apply an emulsion of chemical stripper in water to the floor. Use a mop to soften the wax or finish coat.

Stripping Operations

When stripping floors becomes necessary, the machine used for stripping the finish should be equipped with the least abrasive pad as possible (black pads are usually the most abrasive and the white pad the least abrasive). Consult with your floor tile and floor finish product manufacturer for recommendations on which pad to use on a particular floor covering. Incorporate the manufacturer's recommendations into your floor maintenance work procedures.

The machine used to remove the wax or finish coat should be run at a low rate of speed (i.e., ranging between 175-300 rpm) during the stripping operation. There is a direct correlation between machine speeds and the release of asbestos fibers from asbestos containing floor coverings. The higher the machine speed the greater the probability of asbestos fiber release.

Never perform dry stripping. Always strip floors while wet. Do not operate a floor machine with an abrasive pad on unwaxed or unfinished floor containing-asbestos materials.

Consult with floor tile and floor finish product manufacturers concerning specific or unique problem(s) on the maintenance of your floors.

After Stripping

After stripping and before application of a high solids floor finish, the floor should be thoroughly cleaned, while wet, preferably with a Wet-Vac HEPA filtration vacuum system.

Finishing of Vinyl Asbestos Floor Coverings

Use of Sealer and Solids Finish

Prior to applying a finish coat to a vinyl asbestos floor covering, apply 2 to 3 coats of sealer. Continue to finish the floor with a high percentage solids finish.

It is an industry recommendation to apply several thin coats of a high percentage solid finish to obtain a good sealing of the floor's surface, thereby minimizing the release of asbestos fibers during finishing work.

Spray-Buffing Floors

When spray-buffing floors, always operate the floor machine at the lowest rates of speed possible and equip the floor machine with the least abrasive pad as possible. A recent EPA study indicated that spray-buffing with high-speed floor machines resulted in significantly higher airborne asbestos fiber concentrations than spray-buffing with low speed machines.

Burnishing Floors

When dry-burnishing floors, always operate the floor machine at the lowest rate of speed possible to accomplish the task (i.e., 1200-1750 rpms), and equip the floor machine with the least abrasive pad as possible.

Cleaning After Stripping & Sealing Floors

After stripping a floor and applying a new coat of sealer and finish, use a wet mop for routine cleaning whenever possible. When dry mopping, a petroleum-based mop treatment is not recommended for use.

Maintenance During Winter

During the winter months when sanding and/or salting of icy parking lots becomes necessary, it is an industry recommendation that matting be used at the entrance way to the school building and inside the doorway where feasible. This would significantly eliminate the scuffing of floors by abrasive sanding materials brought into the building on the shoes of building occupants. More frequent wet mopping and dry mopping of floors should be performed during the winter months to minimize damage to the floors.

The same recommendations holds true of schools located on coastal areas where building occupants could track sand into the schools.

Additional Precautions

Conditions of Glides

Check to see if chair and desk glides are in good condition and replace where indicated. Worn glides can gouge the floor coverings and possibly cause asbestos fiber release.

Parking Lot/Walkway Maintenance

During the winter months, have parking lots and walkways swept to avoid tracking salt and ice-melting compounds into the school by students. These materials can cause severe scuffing of floor coverings and lead to the release of asbestos fibers into the school building(s).

Use of Mats

Where feasible, use mats at entrance ways to cafeterias, gymnasiums, libraries, etc., to protect against possible scuffing of floor covering(s), etc. from salt and ice-melting compounds and from ocean sand.

Special Work Practices for Renovation/Remodeling

Building renovation or building system replacement can cause major disturbances of ACBM that are beyond the scope of school O&M programs. Moving walls, adding wings, and replacing heating or air conditioning systems are likely to involve breaking, cutting, or otherwise disturbing ACBM that may be present. It is highly recommended that ACBM that may be disturbed be removed before any of these activities are begun. The LEA may be required to remove the ACBM if the amount of ACBM that is likely to be disturbed exceeds the threshold amounts of 160 square feet or 260 linear feet established by the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations. *(See Chapter 11 for further information on the Asbestos NESHAP regulations.)*

Although remodeling projects change the building structure less dramatically than renovation projects, disturbances of ACBM are still possible. When a remodeling project involves direct contact with ACBM (such as painting or wallpapering over ACBM), the O&M procedures described in § 763.91(d) of the AHERA Rule must be followed. If the work to be done will make the material friable, the work must either be limited to small-scale, short-duration or be treated as a response action.

Handling and Disposing of Asbestos Wastes

The amount and type of asbestos present both determine whether the LEA must notify

EPA (or delegated states) and what procedures that the LEA must follow to control asbestos emissions. If the amount exceeds the regulatory threshold, then a written notification must be submitted ten working days prior to any asbestos stripping or removal operation or demolition operation. EPA regulations (along with state and local requirements) provide detailed instructions on the handling, transport, and disposal of asbestos materials. This includes emission control methods (such as wetting and leak proof wrapping), labels on the containers, recordkeeping and a trained representative on-site. Waste must be disposed of at a site meeting federal, state and local requirements. For a site in your area, contact the local public health department.

Chapter 8 Summary
Key Points About the Operations and Maintenance Program

An O&M program must be implemented whenever any **friable** ACBM is present or assumed to be present in a school building or whenever any nonfriable ACBM or assumed nonfriable ACBM is about to become friable as a result of activities performed in the school building.

Unless the building has been cleaned using similar methods in the previous 6 months, all areas of a building where friable ACBM, friable suspected ACBM assumed to be ACBM, or significantly damaged TSI ACBM is present must be **cleaned** using the methods described at § 763.91(c) of the AHERA Rule at least once after the completion of the AHERA inspection and before the initiation of any response action, other than O&M activities or repair.

Specialized work practices and procedures must be followed for any O&M activities disturbing **friable** ACBM.

When a fiber release episode occurs, the work practices that must be followed depend on whether the episode is minor or major in nature. A **minor fiber release episode** consists of the falling or dislodging of 3 square or linear feet or less of friable ACBM. A **major fiber release episode** consists of the falling or dislodging of more than 3 square or linear feet of friable ACBM.

Once ACBM is identified or assumed to be present, the LEA should start a **notification and warning program** to alert affected parties to a potential hazard in the building and to provide basic information on how to avoid the hazard.

The LEA is required to attach a **warning label** immediately adjacent to any friable and nonfriable ACBM and suspected ACBM that is assumed to be ACBM that is located in routine maintenance areas.

Where employees work in areas where fiber levels exceed permissible exposure limits or are required to wear pressure respirators, the LEA must establish **medical surveillance and respiratory protection programs.**

A designated person can minimize accidental disturbances of ACBM during maintenance and renovation activities by establishing a **permit system** that calls for all work orders and requests to be processed through the designated person.

The specific work practices that must be followed when routine maintenance activities are being conducted depend on the likelihood that the activities will disturb the ACBM and cause fibers to be released.

Fiber Release Episode Report

1. Address, building, and room number(s) (or description of area) where episode occurred:

   _____
   _____
   _____
   _____

2. The release episode was reported by _____ on _____ (date).

3. Describe the episode:_____
   _____
   _____
   _____
   _____
   _____
   _____
   _____

4. The asbestos-containing material was _____/was not _____ cleaned up according to approved procedures. Describe the cleanup:_____
   _____
   _____
   _____
   _____

Signed_____ Date: _____
(Asbestos Program Manager)

Example Form 5

Work Permit Application

1. Address, building, and room number (or description) where work is to be performed:
   _____
   _____
2. Requested starting date: _____ Anticipated finish date: _____
3. Description of work: _____
   _____
   _____
   _____
   _____
4. Description of any asbestos-containing material that might be affected, if known (include location and type):
   _____
   _____
   _____
   _____
   _____
   _____
5. Name and telephone number of requestor: _____
6. Name and telephone number of supervisor: _____

Submit this application to the asbestos program manager.

NOTE: An application must be submitted for all maintenance work whether or not asbestos-containing material might be affected. this authorization must then be signed before any work can proceed.

_____ Granted (Work Permit No _____)
_____ Denied (See Asbestos Program Manager)
_____ Denied (until further sampling is conducted)

Signed_____ Date _____
Asbestos Program Manager

9 TRAINING AND ACCREDITATION

Introduction

AHERA requires that LEAs employ accredited persons to perform most of the activities associated with asbestos management. Building inspectors, management planners, project designers, contractors/supervisors, and asbestos workers must all complete EPA- or State-approved courses that result in accreditation. The specific training requirements for each of these categories of workers are outlined in Appendix C to the AHERA Rule (the AHERA Model Accreditation Plan). The AHERA Rule also details specific training requirements for LEA designated persons and maintenance and custodial workers, although these individuals are not required to complete any EPA-approved courses or receive accreditation.

Designated Person Training

AHERA requires that the AHERA Designated Person be *adequately* trained to carry out his or her responsibilities. Due to the differing needs of school districts based on the size of the district and the amount and condition of the ACBM, AHERA does not list a specific training course or specific number of hours of training for the DP. Further, AHERA does not require the DP to be accredited. Specifically, the regulations note the training must include the following topics:

- health effects of asbestos;
- detection, identification and assessment of asbestos-containing building materials;
- options for controlling asbestos-containing building materials; and
- asbestos management programs.
- Relevant Federal and State regulations concerning asbestos, including AHERA and its implementing regulations and the regulations of the Occupational Safety and Health Administration, the U.S. Department of Transportation, and the U.S. Environmental Protection Agency *(See Chapter 11 for further information on regulations related to AHERA.)*

The training completed by the designated person must be documented by course name, dates, and hours of training. This documentation must be kept as a permanent part of the management plan.

To determine whether reviewing this document would satisfy the training requirements for the DP, school personnel should consult with the regional asbestos coordinator in the EPA Regional Office serving their state.

Maintenance and Custodial Workers

The LEA must ensure that all maintenance and custodial staff who work in a building that contains ACBM receive a minimum of two hours awareness training, whether or not they are required to work with ACBM. New custodial and maintenance employees must be trained within 60 days after the commencement of employment.

The awareness training must include, but is not limited to:

- Information regarding asbestos and its various uses and forms
- Information on the health effects associated with asbestos exposure
- Locations of ACBM identified throughout each school building in which they work
- Information on how to recognize damaged, deteriorated, and delaminated ACBM
- The name and telephone number of the LEA designated person
- Information on the availability and location of the management plan

Staff that disturb ACBM must receive an additional 14 hours of training. Once this additional training is completed, attendees will be adequately trained to conduct small-scale, short-duration activities and/or minor fiber release episode cleanup and repair procedures. The additional training must include, but is not limited to:

- Descriptions of the proper methods for handling ACBM
- Information on the use of respiratory protection as contained in the EPA/NIOSH *Guide to Respiratory Protection for the Asbestos Abatement Industry* (September 1986) and other personal protection measures
- The provisions of the AHERA Rule relating to O&M activities (§ 763.91) and training and periodic surveillance (§ 763.92) as well as Appendices A-E of the Rule, EPA regulations contained in 40 CFR Part 763, subpart G, and in 40 CFR Part 61, Subpart M, and OSHA regulations
- Hands-on training in the use of respiratory protection, other personal protection measures, and good work practices

Maintenance and custodial worker training does not require EPA approval, although some States may have more stringent training requirements. It is recommended that the LEA check with its State on the training requirements for maintenance and custodial workers.

The completion of all training by maintenance and custodial workers must be documented. (*See Chapter 10 under "Training Information" for a discussion of the training records that must be kept.*)

Accredited Personnel

Under AHERA, LEAs may employ the following individuals only if they have completed EPA- or State-approved training courses, passed the exams, and received accreditation.

Building Inspectors -- Building inspectors must complete a minimum of three days (24 hours) of training. Training course information covers technical information needed to identify and describe ACBM and information needed to write an inspection report.

Management Planners -- Management planners must complete a two-day (16 hours) course after they have completed and passed the exam for the building inspector training described above. This course is an extension of the building inspector training and teaches how to develop a schedule (or plan) for implementation of response actions for hazards or potential hazards identified in the inspection report, how to develop an O&M plan, and how to prepare and update a management plan.

Project Designers -- Project designers must complete a three-day (24 hours) abatement project designer training course. The project designer course teaches how to design response actions and abatement projects. It also covers basic concepts of architectural design, engineering controls and proper work practices as required by the regulation.

Contractors/Supervisors -- Contractors/supervisors must complete a minimum of five days (40 hours) of training. The course teaches proper work practices and procedures and covers contractor issues such as legal liability, contract specifications, insurance and bonding, and air monitoring. The course fulfills the OSHA "competent person" training requirement and the NESHAP "trained representative" requirement.

Asbestos Workers -- An asbestos worker must complete a minimum of four days (32 hours) of training. The course covers work practices and procedures, personal protective equipment, health effects of asbestos exposure, and other information critical to individuals who work in an abatement area with hazardous materials.

Update Training

All project designers, contractors/supervisor, and asbestos workers must complete a one day annual refresher training course for reaccreditation. Building inspectors must complete a half-day refresher course. Management planners must attend the half-day building inspector refresher course as well as a half-day management planner refresher course. Documentation of any annual training should be kept in the management plan.

Although not specifically required by the AHERA Rule, annual refresher/update training for maintenance workers is recommended. OSHA requires annual training.

Table 9-1

LEA Employee Training Requirements

Job Title	Subject Matter of Training	Amount of Training (Hours)	Annual Training Update (Hours)
Designated Person	Health effects of asbestos; detection, identification and assessment of ACBM; options for controlling ACBM; asbestos management program; related federal and state laws	Adequate	None
All Maintenance Workers	Asbestos and its uses and forms; health effects associated with asbestos exposure; locating ACBM identified throughout each school building in which they work; recognizing various conditions of ACBM; name and telephone number of LEA designated person; information pertaining to the availability and location of management plan	2	None
Maintenance Workers Who Disturb ACBM	Proper methods for handling ACBM; information on proper use of respiratory protection; hands-on training in the use of respiratory protection, other personal protection measures, and good work practices; information pertaining to various regulations; technical information	16 (asbestos awareness and 14 additional hours)	None

* These 14 hours of training are in addition to the 2 hours of asbestos awareness training that all maintenance workers receive

Note that state and local requirements may be more stringent.

Table 9-2

Accredited Personnel Training Requirements			
Job Title	**Subject Matter of Training**	**Amount of Training (Days)**	**Annual Training Update (Days)**
Building Inspectors	Technical information needed to identify and describe ACBM; information needed to write an inspection report	3	1/2
Management Planners	Extension of the building inspector training, plus how to develop a schedule (or plan) for implementation of response actions for hazards or potential hazards identified in the inspection report, how to develop an O&M plan, and how to prepare a management plan.	2[a]	1[b]
Project Designers	How to design response actions and abatement projects; basic concepts of architectural design, engineering controls and proper work practices	3	1
Contractors/ Supervisors	Proper work practices and procedures; contractor issues such as legal liability, contract specifications, insurance, and bonding; air monitoring	5	1
Asbestos Workers	Work practices and procedures, personal protective equipment, health effects of asbestos exposure, and other critical information	4	1

[a] Management planners must first complete the building inspector training and pass the exam.

[b] This includes the one-half day building inspector training update.

Chapter 9 Summary
Key Points About Training and Accreditation

AHERA does not require that **designated persons** complete EPA- or State-approved courses and become accredited, but § 763.84(g)(2) of the AHERA Rule requires that training for the designated persons provide basic knowledge of a number of asbestos-related subjects.

The LEA must ensure that all maintenance and custodial staff who may work in a building that contains ACBM receive a minimum of **two hours awareness training,** whether or not they are required to work with ACBM. All new maintenance and custodial staff must receive asbestos awareness training within 60 days of hire.

Staff that may disturb ACBM must receive an additional **14 hours** of training.

Building inspectors, management planners, project designers, contractors/supervisors, and asbestos workers must successfully complete EPA- or State-approved courses, pass an exam and **receive accreditation** before they can perform any asbestos-related activities.

Building inspectors, management planners, project designers, contractors/supervisors, and asbestos workers must complete annual EPA- or State-approved **refresher courses** to maintain their accreditation.

10 RECORD-KEEPING

Recordkeeping of Management Plans

Under § 763.93(g) of the AHERA Rule, each LEA is required to keep in its administrative office a copy of the management plans for each school. *(See Table 6-1 for a comprehensive list of the required contents of the management plan.)* The management plan must be available, without cost or restriction, for inspection by the public, including teachers, other school personnel and their representatives, and parents, as well as by representatives of EPA and the State.

In addition, each school is required to maintain in its administrative office a complete and updated copy of the management plan for that school. The school must make the plan available for inspection to those individuals listed above as well as to workers before work begins in any area of a school building.

It is the responsibility of the LEA designated person to ensure that complete and up-to-date records are maintained and included in the management plan. Section 763.94 of the AHERA Rule requires that the LEA maintain the following records *(Note that some of these requirements have been listed in other portions of this guide)*.

Training Information

For each person required to be trained under §§ 763.92(a)(1) and (2) of the AHERA Rule (maintenance and custodial worker training), the LEA must provide:

- The person's name and job title
- The date that training was completed
- The location of the training
- The number of hours completed in the training

Periodic Surveillance Information

Each time that periodic surveillance is conducted under § 763.92(b) of the AHERA Rule, the LEA must record:

- The name of each person conducting the surveillance
- The date of the surveillance
- Any changes in the conditions of the materials being examined

Cleaning Information

Each time that cleaning, as required under § 763.91(c), is conducted, the LEA must record:

- The name of each person performing the cleaning
- The date of the cleaning
- The locations cleaned
- The methods used to perform the cleaning

Small-Scale, Short-Duration O&M Activity Information

Each time that O&M activities under § 763.91(d) of the AHERA Rule are performed, the LEA must provide:

- The name of each person performing the activity
- The start and completion date of the activity
- The locations where such activity occurred
- A description of the activity, including the preventive measures used
- If ACBM is removed, the name and disposal site of the ACBM

Information on O&M Activities Other Than Small-Scale, Short-Duration

Each time maintenance activities are performed that are not of small scale and short duration under § 763.91(e) of the AHERA Rule, the LEA must provide:

- The name and signature of each person performing the activity
- The State, accreditation number, and training provider name of each person performing the activity (a copy of a certificate is ideal)
- The start and completion dates of the activity
- A description of the activity, including preventive measures used
- If the ACBM is removed, the name and location of the ACBM storage or disposal site

Information on Fiber Release Episodes

For each fiber release episode occurring as the result of O&M activities, the LEA must provide:

- The date and location of the episode
- The method of repair, preventive measures or response action taken
- The name of each person performing the work
- If ACBM is removed, the name and location of the ACBM storage or disposal site

Information on Response Actions and Preventive Measures

For each preventive measure and response action taken for friable and nonfriable ACBM and friable and nonfriable suspected ACBM assumed to be ACBM, the LEA must provide:

- A detailed written description of the measure or action, including the method used
- The location where the measure or action was taken
- Reasons for selecting the measure or action
- The start and completion dates of the work
- If applicable, the names and addresses of all contractors involved with the work
- If applicable, the State, accreditation number, and training provider name of all contractors involved with the work (a copy of the certificate)
- If ACBM is removed, the name and location of the ACBM storage or disposal site

Air Sampling Information

In addition to the information required to be provided for each preventive measure and response action taken for friable and nonfriable ACBM and friable and nonfriable suspected ACBM assumed to be ACBM (*See above*), when air sampling is performed for final air clearance of response actions, the LEA must provide:

- The name and signature of any person collecting any air sample required to be collected at the completion of a response action
- The locations where samples were collected
- The date(s) of collection
- The name and address of the laboratory analyzing the samples
- The date(s) of analysis
- The results of the analysis
- The method of analysis
- The name and signature of the person performing the analysis
- A statement that the laboratory is NVLAP accredited or EPA approved

Chapter 10 Summary
Key Points About Recordkeeping

Each **LEA** must **maintain a copy of its management plan** in its administrative office, and the plan must be available to persons for inspection without cost or restriction.

Each **school** must **maintain a copy of the management plan** for that school in its administrative office, and the plan must be available to persons for inspection without cost or restriction.

The LEA must also maintain records of events that occur after submission of the management plan; these records include training information, periodic surveillance information, cleaning information, small-scale, short-duration O & M activity information, information on O & M activities other than small-scale, short-duration, information on fiber release episodes, information on response actions and preventive measures, and air sampling information. These records should be included in the management plans in a timely manner.

For each homogeneous area where all ACBM has been removed, the LEA must retain the records of events for **three years** after the next reinspection, or for an equivalent period.

It is the responsibility of the LEA designated person to ensure that complete and up-to-date records are maintained and included in the management plans.

11 RELATED REGULATIONS

Introduction

Although AHERA and its implementing regulations, the AHERA Rule, set out many of the responsibilities of the LEA, there are several other federal regulations that the LEA should be aware of when implementing an asbestos management program. These regulations include:

- National Emission Standards for Hazardous Air Pollutants (NESHAP)
- Occupational Safety and Health Administration (OSHA) Construction Industry Standard (29 CFR 1926.1101) and General Industry Standard (29 CFR 1910.1001)
- The EPA Worker Protection Rule (40 CFR § 763.121)
- Department of Transportation (DOT) regulations governing the transport and disposal of asbestos-containing materials (49 CFR Parts 171 and 172)

Each of these regulations is discussed in greater detail below. By following the requirements of these related regulations, the LEA can protect not only the people in its buildings from negative health effects but also may protect itself from legal liability. These regulations should be considered to establish minimum standards; going beyond these requirements may help keep buildings as safe as possible. For further information about these related regulations, call the Asbestos Ombudsman Clearinghouse Hotline at (800) 368-5888 between 8:00 a.m. and 4:30 p.m., Eastern.

National Emission Standards for Hazardous Air Pollutants

The LEA (school district) must comply with the National Emission Standards for Hazardous Air Pollutants for Asbestos (NESHAP) regulations when removing asbestos materials. These regulations specify control requirements for most asbestos emissions, and include work practices to be followed to minimize the release of asbestos fibers during the handling, removal and disposal of asbestos waste materials. NESHAP regulations are frequently enforced by the State or Local Agencies.

A significant term, which is used through NESHAP, is Regulated Asbestos-Containing Materials (RACM). RACM is where the amount of friable asbestos-containing material equals or exceeds the threshold amount of 260 linear feet, 160 square feet, or

35 cubic feet.

Prior to the beginning work, an AHERA accredited inspector must inspect the facility for the presence of asbestos. The amount and type of asbestos present both determine whether the LEA must notify EPA (or delegated states) and what procedures that the LEA must follow to control asbestos emissions. If the amount exceeds the regulatory threshold, then a written notification must be submitted ten working days prior to any asbestos stripping or removal operation or demolition operation. The LEA must remove RACM from the facility that is to be demolished or renovated before any other activity begins that would break up, dislodge, or similarly disturb this material. The RACM must be handled in accordance with the asbestos NESHAP regulations, including properly labeling the waste. However, prior removal is not required if the RACM is in a condition that is excepted from prior removal, e.g., it is on a facility component that is encased in concrete or other similarly hard material and is adequately wet whenever exposed during demolition.

Of particular importance to the LEA are the standards for the demolition and renovation of facilities (40 CFR § 61.145) and for waste disposal for demolition and renovation operations (40 CFR § 61.150). The standard for asbestos waste disposal for demolition and renovation operations require that the LEA to: (1) discharge no visible emissions to the outside air during the collection processing, packaging, or transporting of any asbestos-containing waste material; (2) adequately wet the asbestos-containing waste material; (3) process the asbestos-containing waste material into nonfriable forms; or (4) use an alternative emission control and waste treatment method that has received prior approval by EPA or the delegated state.

As soon as possible, all asbestos-containing waste material must be taken to an asbestos waste disposal site or an EPA-approved site that converts regulated asbestos-containing material and asbestos-containing waste material into asbestos-free material as provided by law. If non-RACM will not be made friable during the disposal processes, it may be disposed of at a landfill that accepts normal building debris. Waste shipment records (WSRs), which are only required for RACM, must be maintained by the LEA and contain the information required by law. The WSRs must be retained for at least two years.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration's (OSHA) Construction Industry Standard (29 CFR § 1926.1101) and General Industry Standard (29 CFR § 1910.1001) establish minimum standards for the protection of workers involved in asbestos-related work or employees exposed to asbestos-contaminated workplaces. OSHA regulations exclude federal, state, or local government employees (including public school employees) from its worker protection rules (except in states with OSHA approved

programs). However, EPA has promulgated Worker Protection Rules to cover these employees (see below). These standards include required work practices, engineering controls, permissible exposure limits, written programs for respiratory protection and medical surveillance, methods for compliance, hazard communication, housekeeping, competent person training and responsibilities, and required recordkeeping. Also included are demolition, removal, alteration, repair, maintenance (such custodial workers who clean vinyl asbestos tile floors), installation, clean-up of spills, transportation, disposal and storage of asbestos.

OSHA revised its standards on August 10, 1994. Significant changes to the standards included the following:

- PEL decrease to 0.1 f/cc; action level deleted;

- Asbestos Containing Material defined as material containing more than 1% asbestos (now consistent with EPA);

- Building owners are now covered and have specific duties to identify building materials and notify/communicate with others;

- All asbestos work, regardless of exposure levels, requires at least basic controls and work practices, and exposure monitoring;

- Construction work is classified according to friability of the asbestos and hazardousness of the operation. Increasingly friable and hazardous operations require increasingly stringent engineering controls, work practices, protective equipment, training and monitoring; and

- Training requirements changed to correspond to EPA training.

Two programs are of particular importance to the LEA. OSHA requires establishment of a respiratory protection program (29 CFR § 1910.134) that is designed to protect persons, including the designated person and any employees, who do any work with ACBM. The program requires that such persons be equipped with a respirator that provides adequate protection against asbestos. Further, the program must include written standard operating procedures governing the selection and use of respirators, selection of respirators based on the hazards to which workers are exposed, an instruction and training program in the proper use of respirators and its limitations, and requirements for the cleaning, disinfecting, inspecting, and storing of respirators. The written program must be on the job site when asbestos work is being conducted. *(See Chapter 8 under the heading "Employee Protection & Medical Surveillance Programs" for a further discussion of this program.)*

(See the Model Respiratory Protection Program Checklist at the end of this chapter.)

The second program is the medical surveillance program, which requires that every person who is assigned to work using a respirator must first have a medical examination to determine whether he or she is fit to work in a respirator. A written assurance to that effect signed by the examining physician is required and must be maintained with the employee's medical surveillance records. The employer must keep proof of a medical surveillance program on site where the asbestos work is being performed. *(See Chapter 8 under the heading "Employee Protection & Medical Surveillance Programs" for a further discussion of this program.)*

(See the Medical Examination Checklist at the end of this chapter.)

EPA Worker Protection Rule

The OSHA asbestos standards do not cover all state and local government employees. The EPA Worker Protection Rule (40 CFR § 763.121) extends the protection afforded by the OSHA standards to all state and local government employees who are engaged in asbestos abatement and who are not otherwise covered by OSHA or an OSHA-approved state plan. Thus, when conducting asbestos abatement activities, an employee of a school district is either covered by the OSHA asbestos standards or that employee is protected by EPA's Worker Protection Rule.

Department of Transportation Regulations

Department of Transportation (DOT) regulations (49 CFR Parts 171 and 172) require that asbestos-containing materials be labeled as Class 9 hazardous materials and establish requirements relating to the shipment of ACBM by air, rail or motor vehicles, including the type of packaging, labeling, shipping papers and placards required.

The designated person is responsible for having the ACBM properly transported from a site. The LEA is the generator of the waste product and maintains this responsibility during transportation and disposal. Disposal of asbestos waste also is subject to each state's solid waste regulations.

Chapter 11 Summary
Key Points About Related Regulations

An asbestos management program is subject not only to AHERA and the AHERA Rule, but also may be subject to **NESHAP**, **OSHA**, and **DOT** regulations, and the **EPA Worker Protection Rule**.

Relevant provisions of NESHAP establish **work practices for asbestos air emission control** when a facility is being demolished or renovated, and for the disposal of **asbestos-containing waste material**.

The OSHA established **minimum standards for the protection of workers involved in asbestos-related work or employees exposed to asbestos-contaminated workplaces**. These standards include required work practices, engineering controls, permissible exposure limits, written programs for respiratory protection and medical surveillance, methods for compliance, hazard communication, housekeeping, competent person training and responsibilities, and required recordkeeping. OSHA excludes federal, state, or local government employees from its worker protection rules (including public school employees).

The EPA Worker Protection Rule **extends the protection afforded by OSHA** to all employees in asbestos abatement who may have been excluded from protection by OSHA.

Relevant provisions of DOT regulations establish **labeling, packaging and shipping standards** for the transporting of asbestos-containing materials.

Model Respiratory Protection Program Checklist

Protecting workers from exposure is the responsibility of the employer. Employers are required by law to establish and maintain an effective respiratory protection program as outlined in American National Standards Institute (ANSI) Standard Z88.2-1969. (The more recent edition of ASNI Z88.2 (1980) contains more comprehensive requirements which are not yet incorporated in the OSHA regulation.) This checklist presents a model respiratory protection program for asbestos abatement operations which meets or exceeds the requirements of the present OSHA standard.

The recommendations of this guide not only satisfy the current respiratory protection requirements of existing Federal regulations, but also include recommendations based on current information on respiratory protection.

An effective respirator program should include:

___ 1. A written statement of company policy, including assignment of individual responsibility, accountability, and authority for required activities of the respiratory protection program

___ 2. A written standard operating procedures governing the selection and use of respirators

___ 3. Respirator selection (from NOISH/MSHA approved and certified models) on the basis of hazards to which the worker is exposed

___ 4. The medical examination of workers to determine whether or not they may be assigned an activity where respiratory protection is required

___ 5. User training in the proper use and limitations of respirators (which also is a way to evaluate the skill and knowledge obtained by the worker through training)

___ 6. Respirator fit testing

___ 7. Regular cleaning and disinfecting of respirators

___ 8. Routine inspection of respirators during cleaning, and at least once a month and after each use for those respirators designated for emergency use

___ 9. Storage of respirators in convenient, clean, and sanitary locations

(cont.)

Model Respiratory Protection Program Checklist (cont.)

___ 10. Surveillance of work area conditions and degree of employee exposure (e.g., through air monitoring)

___ 11. Regular inspection and evaluation of the continued effectiveness of the program

___ 12. Recognition and resolution of special problems as they affect respirator use (e.g., facial hair, eye glasses, etc.)

___ 13. Proper respirator use (e.g., procedures for putting on and taking off respirators when entering and exiting the abatement area)

Medical Examination Checklist

A medical examination is the first step in a medical surveillance program. This checklist may be used to determine the thoroughness of the medical examination administered. Although the scope of a medical examination may vary among medical facilities, at a minimum it should include the following:

___ 1. Medical History (completed by examinee)

___ 2. Initial or Periodic Medical Questionnaire for Asbestos Exposure

___ 3. Respiratory History

___ 4. Anthropometric Measurements

A. Height
B. Weight

___ 5. Vital Signs

A. Blood Pressure
B. Pulse
C. Temperature

___ 6. Ophthalmologic Screening

A. Visual Acuity - Near and Far
B. Color Vision
C. Depth perception

___ 7. Urinalysis

___ 8. Pulmonary Function Screen

___ 9. Chest X-ray (administered at the discretion of the physician)

___ 10. Complete Physical Examination by Physician

___ 11. Physician Evaluation for Respirator Use/Clearance

___ 12. Report of Medical Evaluation

Glossary

Air erosion: the passage of air over friable ACBM which may result in the release of asbestos fibers.

Asbestos: the asbestiform varieties of Chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonitegrunerite); anthophyllite; tremolite; and actinolite.

Asbestos-containing material (ACM): any material or product which contains more than 1 percent asbestos.

Asbestos-containing building material (ACBM): surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a school building.

Asbestos debris: pieces of ACBM that can be identified by color, texture, or composition, or means dust, if the dust is determined by an accredited inspector to be ACM.

Damaged friable miscellaneous ACM: friable miscellaneous ACM which has deteriorated or sustained physical injury such that the internal structure (cohesion) of the material is inadequate or, if applicable, which has delaminated such that its bond to the substrate (adhesion) is inadequate or which for any other reason lacks fiber cohesion or adhesion qualities. Such damage or deterioration may be illustrated by the separation of ACM into layers; separation of ACM from the substrate; flaking, blistering, or crumbling of the ACM surface; water damage; significant or repeated water stains, scrapes, gouges, mars or other signs of physical injury on the ACM. Asbestos debris originating from the ACBM in question may also indicate damage.

Damaged friable surfacing ACM: friable surfacing ACM which has deteriorated or sustained physical injury such that the internal structure (cohesion) of the material is inadequate or which has delaminated such that its bond to the substrate (adhesion) is inadequate, or which, for any other reason, lacks fiber cohesion or adhesion qualities. Such damage or deterioration may be illustrated by the separation of ACM into layers; separation of ACM from the substrate; flaking, blistering, or crumbling of the ACM surface; water damage; significant or repeated water stains, scrapes, gouges, mars or other signs of physical injury on the ACM. Asbestos debris originating from the ACBM in question may also indicate damage.

Damaged or significantly damaged thermal system insulation ACM: thermal system insulation ACM on pipes, boilers, tanks, ducts, and other thermal system insulation equipment where the insulation has lost its structural integrity, or its covering, in whole or in part, is crushed, water-stained, gouged, punctured, missing, or not intact such that it is not able to contain fibers. Damage may be further illustrated by occasional punctures, gouges or other signs of physical injury to ACM; occasional water damage on the protective coverings/jackets; or exposed ACM ends or joints. Asbestos debris originating from the ACBM in question may also indicate damage.

Encapsulation: the treatment of ACBM with a material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent the release of fibers, as the encapsulant creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant).

Enclosure: an airtight, impermeable, permanent barrier around ACBM to prevent the release

of asbestos fibers into the air.

EPA Worker Protection Rule: extends the protection afforded by OSHA to all employees in asbestos abatement who may have been excluded from protection by OSHA.

Fiber release episode: any uncontrolled or unintentional disturbance of ACBM resulting in visible emission.

Friable: when referring to material in a school building means that the material, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure, and includes previously nonfriable material after such previously nonfriable material becomes damaged to the extent that when dry it may be crumbled, pulverized, or reduced to powder by hand pressure.

Friable asbestos-containing material (ACM): any material containing more than one percent asbestos which has been applied on ceilings, walls, structural members, piping, duct work, or any other part of a building, which when dry, may be crumbled, pulverized, or reduced to powder by hand pressure. Includes non-friable asbestos-containing material after such previously non-friable material becomes damaged to the extent that when dry it may be crumbled, pulverized, or reduced to powder by hand pressure.

Friable asbestos-containing building material (ACBM): any friable ACM that is in or on interior structural members or other parts of a school or public and commercial building.

Functional space: a room, group of rooms, or homogeneous area (including crawl spaces or the space between a dropped ceiling and the floor or roof deck above), such as classroom(s), a cafeteria, gymnasium, hallway(s), designated by a person accredited to prepare management plans, design abatement projects, or conduct response actions.

High-efficiency particulate air (HEPA): refers to a filtering system capable of trapping and retaining at least 99.97 percent of all monodispersed particles 0.3 μm in diameter or larger.

Homogeneous area: an area of surfacing material, thermal system insulation material, or miscellaneous material that is uniform in color and texture.

Inspection: an activity undertaken in a school building, or a public and commercial building, to determine the presence or location, or to assess the condition of, friable or non-friable asbestos-containing building material (ACBM) or suspected ACBM, whether by visual or physical examination, or by collecting samples of such material. This term includes reinspections of friable and non-friable known or assumed ACBM which has been previously identified. The term does not include the following:

(1) Periodic surveillance of the type described in 40 CFR 763.92(b) solely for the purpose of recording or reporting a change in the condition of known or assumed ACBM;

(2) Inspections performed by employees or agents of Federal, State, or local government solely for the purpose of determining compliance with applicable statutes or regulations; or

(3) Visual inspections of the type described in 40 CFR 763.90(i) solely for the purpose of determining completion of response actions.

Local education agency:

(1) Any local educational agency as defined in section 198 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 3381).

(2) The owner of any nonpublic, nonprofit elementary, or secondary school building.

(3) The governing authority of any school operated under the defense dependents' education system provided for under the Defense Dependents' Education Act of 1978 (20 U.S.C. 921, et seq.).

Major fiber release episode: any uncontrolled or unintentional disturbance of ACBM, resulting in a visible emission, which involves the falling or dislodging of more than 3 square or linear feet of friable ACBM.

Management Plan: a site specific guidance document that the LEA designated person must follow in managing the ACBM present in a school building.

Minor fiber release episode: any uncontrolled or unintentional disturbance of ACBM, resulting in a visible emission, which involves the falling or dislodging of 3 square or linear feet or less of friable ACBM.

Miscellaneous ACM: other, mostly nonfriable ACM, products and materials (found on structural components, structural members or fixtures) such as floor tile, ceiling tile, construction mastic for floor and ceiling materials, sheet flooring, fire doors, asbestos cement pipe and board, wallboard, acoustical wall tile, and vibration damping cloth. miscellaneous material that is ACM in a school building.

Miscellaneous material: interior building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and does not include surfacing material or thermal system insulation.

Nonfriable: material in a school building which when dry may not be crumbled, pulverized, or reduced to powder by hand pressure.

Operations and maintenance program: a program of work practices to maintain friable ACBM in good condition, ensure clean up of asbestos fibers previously released, and prevent further release by minimizing and controlling friable ACBM disturbance or damage.

Potential damage: circumstances in which:

(1) Friable ACBM is in an area regularly used by building occupants, including maintenance personnel, in the course of their normal activities.

(2) There are indications that there is a reasonable likelihood that the material or its covering will become damaged, deteriorated, or delaminated due to factors such as changes in building use, changes in operations and maintenance practices, changes in occupancy, or recurrent damage.

Potential significant damage: circumstances in which:

(1) Friable ACBM is in an area regularly used by building occupants, including maintenance personnel, in the course of their normal activities.

(2) There are indications that there is a reasonable likelihood that the material or its covering will become significantly damaged, deteriorated, or delaminated due to factors such as changes in building use, changes in operations and maintenance practices, changes in occupancy, or recurrent damage.

(3) The material is subject to major or continuing disturbance, due to factors including, but not limited to, accessibility or, under certain circumstances, vibration or air erosion.

Preventive measures: actions taken to reduce disturbance of ACBM or otherwise eliminate the reasonable likelihood of the material's becoming damaged or significantly damaged.

Public and commercial building: the interior space of any building which is not a school building, except that the term does not include any residential apartment building of fewer than 10 units or detached single-family homes. The term includes, but is not limited to: industrial and office buildings, residential apartment buildings and condominiums of 10 or more dwelling units, government-owned buildings, colleges, museums, airports, hospitals, churches, preschools, stores, warehouses and factories. Interior space includes exterior hallways connecting buildings, porticos, and mechanical systems used to condition interior space.

Removal: the taking out or the stripping of substantially all ACBM from a damaged area, a functional space, or a homogeneous area in a school building.

Repair: returning damaged ACBM to an undamaged condition or to an intact state so as to prevent fiber release.

Response action: a method, including removal, encapsulation, enclosure, repair, operations and maintenance, that protects human health and the environment from friable ACBM.

Routine maintenance area: an area, such as a boiler room or mechanical room, that is not normally frequented by students and in which maintenance employees or contract workers regularly conduct maintenance activities.

School: any elementary or secondary school as defined in section 198 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 2854).

School building:

(1) Any structure suitable for use as a classroom, including a school facility such as a laboratory, library, school eating facility, or facility used for the preparation of food.

(2) Any gymnasium or other facility which is specially designed for athletic or recreational activities for an academic course in physical education.

(3) Any other facility used for the instruction or housing of students or for the administration of educational or research programs.

(4) Any maintenance, storage, or utility facility, including any hallway, essential to the operation of any facility described in this definition of "school building" under paragraphs (1), (2), or (3).

(5) Any portico or covered exterior hallway or walkway.

(6) Any exterior portion of a mechanical system used to condition interior space.

Significantly damaged friable miscellaneous ACM: damaged friable miscellaneous ACM where the damage is extensive and severe.

Significantly damaged friable surfacing ACM: damaged friable surfacing ACM in a functional space where the damage is extensive and severe.

Small-scale, short-duration activities (SSSD): tasks such as, but not limited to:

(1) Removal of asbestos-containing insulation on pipes.

(2) Removal of small quantities of asbestos-containing insulation on beams or above ceilings.

(3) Replacement of an asbestos-containing gasket on a valve.

(4) Installation or removal of a small section of drywall.
(5) Installation of electrical conduits through or proximate to asbestos-containing materials.

SSSD can be further defined by the following considerations:
(1) Removal of small quantities of ACM only if required in the performance of another maintenance activity not intended as asbestos abatement.
(2) Removal of asbestos-containing thermal system insulation not to exceed amounts greater than those which can be contained in a single glove bag.
(3) Minor repairs to damaged thermal system insulation which do not require removal.
(4) Repairs to a piece of asbestos-containing wallboard.
(5) Repairs, involving encapsulation, enclosure, or removal, to small amounts of friable ACM only if required in the performance of emergency or routine maintenance activity and not intended solely as asbestos abatement. Such work may not exceed amounts greater than those which can be contained in a single prefabricated mini-enclosure. Such an enclosure shall conform spatially and geometrically to the localized work area, in order to perform its intended containment function.

Surfacing ACM: interior ACM that has been sprayed on, troweled on, or otherwise applied to surfaces (structural members, walls, ceilings, etc.) for acoustical, decorative, fireproofing, or other purposes.surfacing material that is ACM.

Surfacing material: material in a school building that is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.

Thermal system insulation: material in a school building applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

Thermal system insulation ACM: insulation used to control heat transfer or prevent condensation on pipes and pipe fittings, boilers, breeching, tanks, ducts, and other parts of hot and cold water systems; heating, ventilation, and air-conditioning (HVAC) systems; or other mechanical systems that is ACM.

Vibration: the periodic motion of friable ACBM which may result in the release of asbestos fibers.

Acronyms

ACM:	Asbestos-Containing Material
ACBM:	Asbestos-Containing Building Material
AHERA:	Asbestos Hazardous Emergency Response Act
ASHARA:	Asbestos School Hazard Abatement Reauthorization Act
DOT:	Department of Transportation
EPA:	Environmental Protection Agency
HEPA:	High Efficiency Particulate Air
HVAC:	Heating, Ventilation and Air-Conditioning
LEA:	Local Education Agency
MAP:	Asbestos Model Accreditation Plan
NESHAP:	National Emission Standard for Hazardous Air Pollutants
NIOSH:	National Institute of Occupational Safety and Health
O&M:	Operations and Maintenance
OSHA:	Occupational Safety and Health Administration
PCM:	Phase Contrast Microscopy
PLM:	Polarized Light Microscopy
SSSD:	Small Scale, Short Duration
TEM:	Transmission Electron Microscopy
TSI:	Thermal System Insulation
VAT:	Vinyl Asbestos Tile
VOC:	Volatile Organic Compounds